

This Old House

PREVIEW ISSUE
MAY/JUNE 1995

Antique lumber **Technique** Kitchens **Materials**
Finances Foundations **Craft** Exterior paint
Outdoor fireplace **Fixtures** Timber frame **Tools**



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Steve Thomas and
Norm Abram in
Napa, California

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Cover photograph by William Mercer Mcleod

MAN IS A TOOL-USING
ANIMAL. WITHOUT
TOOLS HE IS NOTHING.
WITH TOOLS HE IS ALL.
Thomas Carlyle



PHOTOGRAPHS BY DANIEL PROCTOR



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PLEASE BE CAREFUL: Home renovation and construction is often dangerous. Anyone who works with power tools, in unfinished buildings and up on roofs puts himself or herself in some kind of danger. We try to promote safe work habits in our articles. But what is safe for an experienced construction professional in some circumstances may not be safe for you. Be sure you know what constitutes safe practice if you try anything you learn here (or elsewhere). Ensure your own safety, and that of anyone you're working with, before you begin working.

You were bound for the Rockies. **Backpack.**
Thoreau. **Places to go.**

This lasted until late-autumn at 10,000 feet. A left at Denver led to marriage. And a home. **Nice.**

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Backpack.

Colorado

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your own terrain.

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UPPER PHOTOGRAPH BY DAN BORRIS, LOWER PHOTOGRAPH BY DARRIN HADDAD

contributors

MAY/JUNE



1 MARK FEIRER (author, "Circular Saws") joined the staff of *Fine Homebuilding* magazine, later becoming its editor, after years of work in construction. He has written three books and an upcoming CD-ROM on remodeling. His training began in a small custom cabinet shop and progressed to residential construction before he turned to editing. He's now a contributing editor at Reader's Digest General Books and lives in a

perfectly good house in Connecticut that he's taking apart anyway.



2 MICHEAL P. McLAUGHLIN (photographer, "Salvaging Antique Lumber") grew up in Providence, Rhode Island, in a series of houses under endless renovation. He has taken portraits of people in every occupation: dairy farmers, lighthouse keepers, hunting-dog breeders, painters and sculptors. A personal project for several

years has been photographing roadside buildings throughout the South. He now lives in a loft above

a bakery in Brooklyn, New York. **3 JOHN S. SALADYGA** (author, "Exterior Painting" and "Treated Wood") is a writer for the home section of *Newsday*. He lives in East Setauket, New York, in a 1964 split-level home he's been restoring for the past seven years. He got his start helping his family renovate a six-unit frame house in Brooklyn, New York. After deciding to take a break from the newspaper world several years ago,

John worked for three years as a contractor renovating Victorian homes in Nyack, New York. **4 PETER BOSCH** (photographer, "Exterior Painting"), along with his wife and sons, is in the process of restoring a 1907 former country home in the Catskill Mountains. During the

week, he works as a freelance photographer in New York City and Europe. **5 KEN DRUSE** (author, "Long-Lived Trees") writes about gardening and landscape design. His work has been featured on WGBH-TV's "The Victory Garden." His most recent book is *The Natural Habitat Garden* (Clarkson N. Potter, 1994). He lives and gardens in and around an 1873 brownstone townhouse in Brooklyn, New York.

6 PETER LEMOS (author, "Locksets") works at "antiquing" a postwar Cape Cod-style

house on the coast of Maine between writing projects; it's the latest in a series of whole-house renovations. In an effort to create charm where there was none, he has replaced 15 hollow-core 1950s doors with traditional six-panel pine doors, drilling and fitting each one.



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Editorial Offices 20 West 43rd Street, New York, NY 10036 (212-522-9465)
Editorial E-mail: letters@toh.com

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Indianapolis WFYI-TV, Sat. 10:00 am Sun. 7:00 pm	Sioux City KSIN-TV, Fri. 6:30 pm Sat. 1:30 pm	Lexington WKLE-TV, Sun. 5:00 pm	Monroe KJTM-TV, Sat. 4:00 pm Sun. 10:00 am	Boston WGBX-TV, Sun. 9:00 am and 12:30 pm	Berkeley KAWB-TV, Sat. 12:30 pm
Merrillville WYIN-TV, Sun. 3:30 pm	Louisville WKMJ-TV, Sun. 5:00 pm	Louisville WKPC-TV, Wed. 1:30 pm Sat. 1:30 pm	Shreveport KITS-TV, Sat. 4:00 pm Sun. 10:00 am	Springfield WGBY-TV, Thu. 8:00 pm Sat. 5:30 pm	Brainerd KAWB-TV, Sat. 12:30 pm
STEVE THOMAS May 2 in Norwich, CT Eastern Connecticut Community Foundation's Annual Meeting September 14 in Calgary, Alberta, Canada Calgary Fall Home Show September 18 in La Plume, PA Public Lecture at Keystone Junior College	MAINE Bangor WMEB-TV, Sat. 1:30 pm	Madisonville WKMA-TV, Sun. 4:00 pm	Calais WMEB-TV, Sat. 1:30 pm	Cadillac WCMV-TV, Sat. 2:30 pm	Duluth WDSE-TV, Sat. 6:30 pm Sun. 9:30 am
Muncie WIPB-TV, Thu. 8:00 pm Sun. 4:30 pm	Morehead WKMR-TV, Sun. 5:00 pm	Lewiston WCLB-TV, Sat. 1:30 pm	Detroit WTVS-TV, Thu. 8:30 pm Sat. 10:00 am	MICHIGAN Ann Arbor WCML-TV, Sat. 2:30 pm	St. Paul/ Minneapolis KTCA-TV, Wed. 7:30 pm Sat. 9:30 am, 10 am and 6:30 pm
Waterloo KRAT-TV, Fri. 6:30 pm Sat. 1:30 pm	Murray WKML-TV, Sun. 4:00 pm	Portland WMEA-TV, Sat. 1:30 pm	MISSISSIPPI Biloxi WMAH-TV, Sat. 7:00 pm		

Booneville WMAF-TV, Sat. 7:00 pm	Lexington KLINE-TV, Sat. 10:30 am and 5:30 pm	New Brunswick WNJB-TV, Tue. 10:00 pm Sat. 8:00 pm Sun. 5:30 pm	Watertown WNPE-TV, Sat. 10:30 am
Bude WMAF-TV, Sat. 7:00 pm	Lincoln KJON-TV, Sat. 10:30 am and 5:30 pm	Trenton WNJT-TV, Tue. 10:00 pm Sat. 8:00 pm Sun. 5:30 pm	NO. CAROLINA Asheville WUNF-TV, Sat. 5:30 pm Sun. 9:00 am
Greenwood WMAO-TV, Sat. 7:00 pm	Merriman KRNE-TV, Sat. 10:30 am and 5:30 pm	NEW MEXICO Albuquerque KNME-TV, Thu. 7:30 pm Sun. 10:30 am	Chapel Hill WUNC-TV, Sat. 5:30 pm Sun. 9:00 am
Jackson WMPN-TV, Sat. 7:00 pm	Norfolk KXNE-TV, Sat. 10:30 am and 5:30 pm	Las Cruces KRWC-TV, Sat. 1:30 am	Charlotte WTVI-TV, Tue. 12:30 pm Thu. 8:00 pm Sat. 5:00 pm Sun. 11:00 am
Oxford WAAV-TV, Sat. 7:00 pm	North Platte KPNE-TV, Sat. 10:30 am and 5:30 pm	Portales KENW-TV, Sat. 3:30 pm	Charlotte WUNC-TV, Sat. 5:30 pm Sun. 9:00 am
Meridian WMAW-TV, Sat. 7:00 pm	Omaha KYNE-TV, Sat. 10:30 am and 5:30 pm	NEW YORK Binghamton W5KC-TV, Sat. 1:30 pm	Columbia WUND-TV, Sat. 5:30 pm Sun. 9:00 am
Mississippi State WMAF-TV, Sat. 7:00 pm	NEVADA Las Vegas KLVS-TV, Sat. 2:30 pm	Buffalo WNEB-TV, Sat. 10:45 am	Greenville WLNK-TV, Sat. 5:30 pm Sun. 9:00 am
MISSOURI Joplin KOZJ-TV, Sat. 12:30 pm	Reno KNPB-TV, Sat. 10:30 am	Buffalo WNEQ-TV, Sun. 7:00 pm	Jacksonville WJNM-TV, Sat. 5:30 pm Sun. 9:00 am
Kansas City KCPT-TV, Thu. 7:00 pm Sat. 12:30 pm	NEW HAMPSHIRE Durham WENH-TV, Thu. 7:30 pm Sun. 11:00 am	Garden City WLW-TV, Sat. 10:30 am	Livonia WJNE-TV, Sat. 5:30 pm Sun. 9:00 am
Sedalia KMOS-TV, Sat. 12:30 pm	Keene WFAW-TV, Thu. 7:30 pm Sun. 11:00 am	New York WNET-TV, Sat. 6:00 pm and 6:30 pm	Roanoke Rapids WUNP-TV, Sat. 5:30 pm Sun. 9:00 am
Springfield KOZK-TV, Sat. 12:30 pm	Liverpool WLED-TV, Thu. 7:30 pm Sun. 11:00 am	Norwood WNP-TV, Sat. 10:30 am	Wilmington WLNJ-TV, Sat. 5:30 pm Sun. 9:00 am
St. Louis KETC-TV, Wed. 12:30 pm Sat. 6:30 pm	MONTANA Bozeman KLSM-TV, Sat. 1:30 am	Plattsburgh WCFE-TV, Sun. 11:30 am	Winston-Salem WJNC-TV, Sat. 5:30 pm Sun. 9:00 am
NEBRASKA Allamore KINE-TV, Sat. 9:30 am and 4:30 pm	NEW JERSEY Camden WNJS-TV, Tue. 10:00 pm Sat. 8:00 pm Sun. 5:30 pm	Rochester WAXI-TV, Sat. 10:30 am Sun. 5:30 pm	NORTH DAKOTA Bismarck KBME-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm
Bassett KMNE-TV, Sat. 10:30 am and 5:30 pm	Montclair WNJN-TV, Tue. 10:00 pm Sat. 8:00 pm Sun. 5:30 pm	Schenectady WAIHT-TV, Tue. 1:30 pm Sat. 10:30 am	Minot KSRE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm
Hastings KHNE-TV, Sat. 10:30 am and 5:30 pm	Syracuse WCCY-TV, Sat. 10:30 am		Cleveland WVIZ-TV, Tue. 7:30 pm Sat. 1:00 pm Sun. 12:30 pm

NORM ABRAHAM

May 3 Santa Monica, CA
Barnes & Noble
June 2, in Kirkland, WA
Price Costco Warehouse
June 7 in Edina, MN
Barnes & Noble
June 8 in Overland Park, KS
Borders Bookshop
June 9 in St. Louis, MO
Loray LTD
June 15, in Boston, MA
Waterstone's
June 16, in Trumbull, CT
Waldenbooks
August 13-14 in Chicago, IL
The Hardware Show

Dickinson KDSF-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Ellendale KJRE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Fargo KFME-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Grand Forks KGFE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm
Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm	Winston KWSE-TV, Mon. 10:00 pm Tue. 10:00 pm Wed. 10:00 pm Thu. 7:00 pm and 10:00 pm Sat. 6:00 pm

*times and dates may vary, check your local listings

television listings

where and when to see this on house

Columbus WOST-TV, Thu. 8:00 pm Sat. 4:30 pm	Portland KOPB-TV, Thu. 8:00 pm Sat. 5:00 pm	Florence WJPM-TV, Sat. 1:30 pm	Lexington WLJT-TV, Thu. 9:30 pm Sat. 12:30 pm	UTAH Provo KBYL-TV, Sat. 9:30 am, noon	Richland KTNW-TV, Wed. 7:30 am Sat. 2:00 pm
Dayton WPTD-TV, Thu. 8:00 pm Sat. 9:30 am Sun. noon	PENNSYLVANIA Allentown WLVI-TV, Thu. 8:00 pm Sat. 6:00 pm	Greenville WNTV-TV, Sat. 1:30 pm	Memphis WKNO-TV, Sat. 9:30 am	Salt Lake City KUED-TV, Sat. 8 am and 5 pm	Seattle KCTS-TV, Sun. 5:00 pm
Portsmouth WPBO-TV, Thu. 8:00 pm Sat. 4:30 pm	College Park WPSX-TV, Sat. 5:00 pm Sun. 4:30 pm	Greenwood WNEH-TV, Sat. 1:30 pm	Nashville WDCN-TV, Sat. 4:30 pm	VERMONT Burlington WETK-TV, Thu. 8:00 pm Sat. 11:00 am	Spokane KSPS-TV, Sat. 10:30 am Sun. 5:30 pm
Toledo WGTE-TV, Thu. 8:00 pm Sat. & Sun. 1:00 pm	Eric WQLN-TV, Sat. 6:30 pm	Rock Hill WNSC-TV, Sat. 1:30 pm	TEXAS Amarillo KACV-TV, Sat. 12:30 pm	Rutland WVER-TV, Thu. 8 pm, Sat. 11 am	Tacoma KATC-TV, Thu. 6:30 pm Sat. 12:30 pm
OKLAHOMA Cheyenne KWET-TV, Sat. 9:30 am and 12:30 pm Sun. 3:00 pm	Harrisburg WITF-TV, Thu. 8:00 pm Sat. 6:00 pm	Spartanburg WRFT-TV, Sat. 1:30 pm	Austin KLRU-TV, Sat. 5:30 pm	St. Johnsbury WVTB-TV, Thu. 8 pm, Sat. 11 am	Yakima KYVE-TV, Sun. 5:00 pm
Eufaula KOET-TV, Sat. 9:30 am and 12:30 pm Sun. 3:00 pm	Philadelphia WHYY-TV, Sat. 11:00 am and 6:00 pm Sun. 8:00 pm	SOUTH DAKOTA Aberdeen KDSD-TV, Sat. 4:00 pm	College Station KAMU-TV, Mon. 5:00 pm Sat. 12:30 pm	Windsor WVTA-TV, Thu. 8 pm, Sat. 11 am	WEST VIRGINIA Beckley WSWP-TV, Sat. 12:30 pm
Oklahoma City KETA-TV, Sat. 9:30 am and 12:30 pm, Sun. 3 pm	Pittsburgh WQED-TV, Sat. 4:30 pm and 6:30 pm	Brookings KFSD-TV, Sat. 4:00 pm	Corpus Christi KEDT-TV, Sat. 12:30 pm and 9:00 pm	VIRGINIA Charlottesville WHIT-TV, Sat. 8:30 am	Huntington WPBY-TV, Sat. 1:30 pm
Tulsa KOED-TV, Sat. 9:30 am and 12:30 pm, Sun. 3 pm	Pittsburgh WQEX-TV, Wed. 8:30 pm	Eagle Butte KFSD-TV, Sat. 3:00 pm	Dallas/Ft. Worth KERA-TV, Sat. 6:30 pm	Harrisonburg WVPT-TV, Sat. 1:30 pm and 4:30 pm	Morgantown WNPB-TV, Sat. 7:00 pm
OREGON Bend KOAB-TV, Thu. 8:00 pm Sat. 5:00 pm	Pittston WVIA-TV, Thu. 8:00 pm Sat. 5:00 pm and 5:30 pm	Lowry KQSD-TV, Sat. 4:00 pm	El Paso KCO5-TV, Sat. 4:00 pm	Marion WMSY-TV, Sat. 1:30 pm	WISCONSIN Green Bay WPNE-TV, Sun. 4:00 pm
Corvallis KOAC-TV, Thu. 8:00 pm Sat. 5:00 pm	RHODE ISLAND Providence WSBF-TV, Tue. 8:30 pm Sat. 1:30 pm	Martin KZSD-TV, Sat. 3:00 pm	Harlingen KMBH-TV, Sat. 12:30 pm	Norfolk WHRO-TV, Thu. 8:00 pm Sat. 8:30 am, 2 pm	La Crosse WHLA-TV, Sun. 4:00 pm
Eugene KEPB-TV, Thu. 8:00 pm Sat. 5:00 pm	SOUTH CAROLINA Alandale WEBA-TV, Sat. 1:30 pm	Pierre KTSD-TV, Sat. 4:00 pm	Houston KUHT-TV, Mon. 1:30 pm Sun. 11:30 am	Norton WSBN-TV, Sat. 1:30 pm	Madison WHA-TV, Sun. 4:00 pm
Klamath Falls KFTS-TV, Sat. 10:30 pm	Beaufort WJWJ-TV, Sat. 1:30 pm	Rapid City KBHE-TV, Sat. 3:00 pm	Killeen KNCT-TV, Sat. 12:30 pm	Richmond WCVE-TV, Sat. 8:30 am	Menomonee WHWC-TV, Sun. 4:00 pm
La Grande KTVR-TV, Thu. 8:00 pm Sat. 5:00 pm	Charleston WTVV-TV, Sat. 1:30 pm	Vermillion KLSD-TV, Sat. 4 pm	Lubbock KTXT-TV, Sat. 12:30 pm	Richmond WCVW-TV, Fri. 8:30 pm	Milwaukee WMVS-TV, Thu. 7:30 pm Sat. 8:00 am and 6:00 pm
Medford KSYS-TV, Sat. 10:30 pm	Columbia WRIA-TV, Sat. 1:30 pm	TEXNESSEE Chattanooga WTCI-TV, Sat. 1:30 pm	Odessa KOCV-TV, Tue. 11:00 am Sun. 12:30 pm	Roanoke WBRA-TV, Sat. 1:30 pm	Park Falls WLEF-TV, Sun. 4:00 pm
	Conway WHMC-TV, Sat. 1:30 pm	Cookeville WCTE-TV, Sat. 12:30 pm	San Antonio KLRN-TV, Sat. 5:30 pm	WASHINGTON Centralia KCKA-TV, Thu. 6:30 pm Sat. 12:30 pm	Wausau WHRM-TV, Sun. 4:00 pm
		Knoxville WKOP-TV, Sat. 1:30 pm	Waco KCTF-TV, Mon. 12:30 pm Sat. 12:30 pm	Pullman KWSL-TV, Wed. 7:30 am Sat. 2:00 pm	WYOMING Riverton KCWC-TV, Sat. noon and 5:00 pm

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With so many standard features, it's surprising there's still room for six adults in there.

Long before we began creating the all new 1995 Chevy Lumina, we asked thousands of people what they were really looking for in a new mid-size sedan. Turns out what they wanted more than anything was, well, everything. So the new Lumina comes with a range of standard equipment that, not too long ago, would have been thought impossible for a car in its price range.

At the top of the list is a sophisticated 4-speed automatic. Combined with a new fuel-injected, 160-horsepower V6 engine, it delivers power to the front wheels as quickly as your right foot can ask it to. So you'll be comfortable with all that power, a quick cooling air



conditioning system with CFC-free refrigerant also comes as standard equipment

We also added power door locks. Vanity mirrors for both driver and passenger (lighted



on the passenger side). Theater lighting that slowly dims after you enter the car. Intermittent wipers, dual sport mirrors, and even an adjustable steering column are standard, too.

And the whole beautiful package is pro-

ected by a theft deterrent system. Because as you've just learned, there's a lot of valuable stuff inside. See the new Lumina at your neighborhood Chevy dealer. Ask to take a test drive. And bring a friend. Or five.

ALL NEW LUMINA  GENUINE CHEVROLET™



In a durability test, the competitor's hammer lasted 60 seconds. If you happen to need one for longer than that, buy a Stanley hammer.

This picture tells the story better than any words can. In our overstrike tests, the Stanley hammer outlasted the competitor's brand by a 4 to 1 ratio.*

You see, after years of research (and a whole lot of sleepless nights) our engineering department concluded that jacketed, solid core fiberglass is more durable than the compression

molded variety some of our competitors use to make their hammers.

That's the Stanley philosophy. Don't quit working until your product is perfect! You'll find this kind of dogged determination across the board at Stanley. In everything we make. Like a garage door insulated to reduce noise. Or a closet organizer made

with steel planks instead of wire so it doesn't wrinkle your clothes.

It's innovative thinking like this that's kept us ahead of the competition for more than 150 years. At Stanley we're not happy simply churning out products. We're only happy when our products are better than anyone else's.

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In the 16 years This Old House has been on the air, the show has received thousands of questions. Finally, we have a place to answer them. If you have a house-related query, write:

This Old House
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New York, NY 10036
or e-mail
letters@toh.timeinc.com

Extras

Additions and

Photographs by Darrin Haddad

tube sale

If you light a basement or garage with four-foot fluorescents, stock up on replacement bulbs now. Cool white 40-watt fluorescents, common 99-cent specials, cannot be made or imported after October 31. The National Energy Policy Act of 1992 allows four-foot fluorescents only if they use less energy or emit better quality light. Manufacturers now offer bulbs that do both, but they're pricey—which is why most lighting experts we consulted expect 34-watt "energy-saver" cool whites to become the norm. They're cheap (about \$1.50) and simple.

But the energy-savers won't work in many old fixtures—or in many being sold today. When we went shopping this spring, sales clerks assured us all their fixtures would accept energy-savers. When we tried them out, two bulbs glowed only at the ends. Others flickered so much a clerk felt ill. A third set of bulbs became too hot to touch. Lighting experts confirmed our results.

The problem is with the ballast, a box inside the fixture that adjusts the current. Only ballasts labeled "high power factor" can take the energy-savers. "Normal power factor" ballasts—the ones in most inexpensive workshop lights—cannot. To see which kind you have, disconnect the fixture, twist out the bulbs and remove the cover. If your ballast says nothing about power factor but lists only 40-watt bulbs, that's all it will take.

It's worth checking now. If your ballasts require 40-watt bulbs, you'll know that when it's time to replace, you can: 1) spend \$20 on a high power factor ballast so you can use the cheap 34-watt bulbs; 2) buy expensive color-corrected 40-watt replacements; 3) spend \$20 on an electronic ballast and then buy the skinny, one-inch bulbs known as T-8s.

Or, 4), avoid the whole mess. Stock up on 99-centers now. They're supposed to last for 20,000 hours, so a few dollars should give you light for years to come. No, it's not the most energy-efficient option. Unless, of course, it's your energy we're considering.



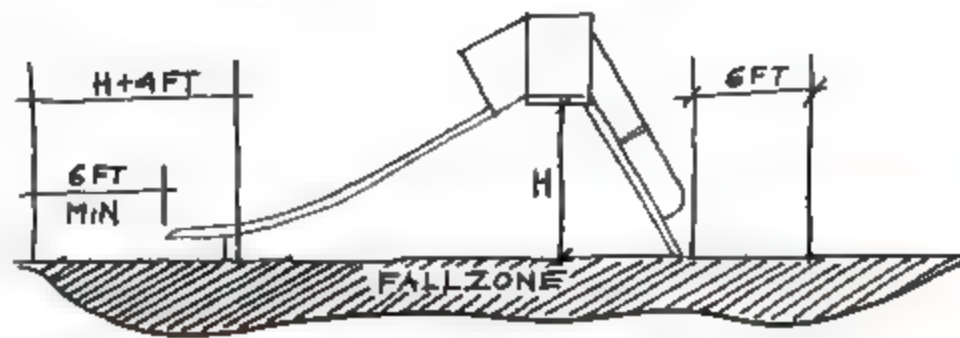
I'd like to build a garden house, any suggestions? The nicest kits we've seen are from Heritage Garden Houses, of Lansing, Michigan (517-372-3385). But they're pricey. The one at left is \$11,000. Want to design your own? Read Lester Walker's *Tiny Houses* (Overlook Press: \$29.95).

Are triangle-face hammers a gimmick?

Ted Floyd, a carpenter in California, doesn't think so.

He developed the triangular face to better fit into tight spots and to pound close to corners. His finish and framing hammers also have a magnetized T-shaped recess in the cheeks that can hold a nail during a first sideways strike while one hand keeps wood or drywall in place. Their claws have a thinner "V", to pull small nails more easily. They come in five sizes, from 10 ounces to 30 ounces. The 18-ounce, shown here, costs \$32.95; call 800-645-2434. They're very handsome. Do they work? Steve Thomas says he has one but usually reaches for a regular hammer instead. One drawback is that if your aim is even slightly off, you can leave a sharp dent in your work.

Norm says, "Measure twice, cut once."



Can I put a backyard playset on grass?

No. You need to cushion wherever a head can hit, and grass is too hard—especially after the kids compact it into pavement. At public playgrounds, the U.S. Consumer Product Safety Commission recommends a cushioned "fall zone" 6 feet beyond most equipment. Swings should have more—twice the height in front and back, plus 6 feet on either side. (To get the free "Handbook for Public Playground Safety," write to the CPSC, Washington, DC 20207.) Even those who scrimp on the area of cushioning should follow recommendations for depth, which the commission determined by dropping a metal "head" full of instruments. How much will it cost? Rubber mats are expensive—\$10 a square foot installed. That leaves loose fill. A 6-inch blanket of bulk sand or pea gravel

costs about 50 cents a square foot, plus delivery charges, at our sources. Several playground designers recommended hardwood chips, previously available only in bulk but going on sale this spring in 3-cubic-foot bags from Fibar Systems (800-342-2721); the price works out to about \$1 per square foot for a 6-inch layer. For his part, the head of the CPSC's testing program says he'd use mulch from his local landfill. "It's free." Use your common sense, too. Keep equipment low—under 5 feet if possible. And consider advice from Candice Stein, a landscape designer in San Jose, California. Because cushioning compacts where it's needed most, she suggests digging a hole 2 feet deep at the end of slides or other key spots, and filling it with cushioning.

MATERIAL	UNCOMPRESSED DEPTH			COMPRESSED DEPTH	
	6"	9"	12"		
SAND	5"	5"	6"	4"	GOOD FOR PLAY BUT CAN ATTRACT CATS. MAY COMPACT, REDUCING CUSHIONING
PEA GRAVEL	6"	7"	10"	6"	DOES NOT COMPACT OR ROT BUT AWKWARD TO WALK ON. NEAR LAWN CAN BE KICKED OUT AS MISSILE BY MOWER
SHREPPED WOOD	6"	10"	11"	7"	KNITS INTO FIRM SURFACE, STAYS PUT. NEEDS OCCASIONAL TOPPING OFF
MULCH	7"	10"	11"	10"	FREE IN MANY COMMUNITIES. MUST BE REPLENISHED AS IT DECOMPOSES

*Numbers are heights (in feet) from which a fall onto the given depth of material would not be fatal

Covering the play area with 2-inch-thick RUBBER MATS, common in public playgrounds, will probably cost more than buying a playset.



PRODUCT RECALL

Makita USA Inc. is recalling about 130,000 of its five-inch random orbit finish sanders after 10 reports that the metal fan inside had fractured during use. Twice, people were hurt when pieces broke through the motor cover. The recall applies to model B05000, sold nationwide from April 1992 to June 1994, for about \$125. An "N" stamped before the serial number indicates the sander already has been repaired. Others should be returned to the nearest Makita service center for repair. Look in the phone book or call the company at 714-522-8086.

Do any of the "green" paint strippers work?

We've tried two that were quite effective: Woodfinisher's Pride and Citristrip. Both are based on n-methyl-2-pyrrolidone (NMP) which is nonflammable and produces fewer toxic vapors. (Citri-



strip also contains d-limonene, a citrus-scented solvent; it actually smells nice.) They're not cheap, and they take much longer to work than traditional strippers. But we recommend them since the old, methylene chloride strippers offer speed at the expense of health: They're both carcinogenic and narcotic. Citristrip: 810-340-0400. Woodfinisher's: 801-775-0100.

ILLUSTRATION BY MARION ZINZEL

WE DIDN'T BUILD IT AS A LOW-PRICED MITER SAW. WE BUILT IT AS A DELTA.



You're looking at the lowest priced 10" Power Miter Saw we make. Packed with all the stamina and precision you'd expect to find in a more expensive saw. At a glance you can see more features than you're paying for. So what's the catch?

No catch. It's just that we have miter saws down to a science. We've built more configurations of power miter saws than anyone. So you benefit from efficiencies in design and cost of manufacturing that allow us to build professional quality saws at a less-than-professional price.

This one weighs only 28 pounds, so you can take it right to the job. Crosscuts a 2x6 or 4x4 at 90°. Miter a 2x4, flat or on edge, in a single pass at 45°. A rigid



cast iron head support ensures accuracy. D handle design with a trigger switch gives you positive on-off control. Electric blade brake automatically stops the blade when you let go. However, we should probably warn you: This isn't a saw you'd want to let go of, once you get your hands on it.

For the name of the nearest dealer, home center or hardware store carrying Delta tools, call Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

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The New Yankee Workshop with Norm Abram

The American Woodshop with Scott Phillips



Where do I find recycled building materials?

Choose to Reuse, by Nikki and David Go d-heck, is a fat new book (480 pages) listing suppliers of used materials across the country. It costs \$18.95 from Ceres Press, P.O. Box 87, Woodstock, NY 12498, 914-679-5573. It tipped us to Urban Ore in Berkeley, which has been so successful selling items destined for the dump that it is gearing up to offer franchises. With an inventory that produced revenues of \$1.4 million last year, it's certain to have something you can use. We picked up a leaded glass window, a (new) brass faucet, a balluster and a post support, all at prices well below retail.

If you have a computer and modem, try the National Materials Exchange Network, a free bulletin board service. The emphasis is on industrial byproducts (want a few vats of acid?),

but wood, metal and other construction materials are there too. Organizer Bob Smee said he sees great potential for exchanges of building materials, especially since listings can be sorted by area code. Call 509-466-1532 for information. The World Wide Web address is <http://www.earthcycle.com/nmen>; modem users without Internet access can call the bulletin board number, 509-466-1019.



"A good architect can improve the looks of an **old house** merely by discussing the cost of a new one." *Anon*

What stops dry rot in beams?

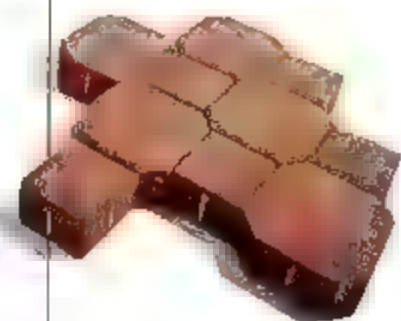
Dry rot is decay caused by fungi (specifically, basidiomycetes), which can grow only with moisture. Norm says you should vent the space under your floor: if there's a dirt floor beneath, cover it completely with a sheet of 6-mil polyethylene. If beams are already damaged, apply several coats of an epoxy consolidant to the surface, as we did to the rotten sill in Wayland, Massachusetts. Or, you can inject epoxy into 1/8-inch or 3/16-inch diameter holes drilled into the beam. The epoxy will penetrate dry, rot-softened wood to form a moisture-proof barrier that helps restore some of the wood's strength. Pay particular attention to the ends of the beam.

Can you recommend a garden planner book?

We've found most garden design books to be little more than pretty pictures with no advice on recreating them. But *John Brookes Garden Design Workbook: A Practical Step-by-Step Course* is just what its subtitle promises. Its theory is that virtually any house has some underlying, unifying grid that determines such things as window and door placement. Figure that out and you'll be able to design patios, walkways and other features in pleasing proportion. A series of marked-up overlays imposed on photographs of houses and their yards shows just how to do it. There may well be other good ways of designing a garden, but this one struck us as eminently *usable*. Newly published by Dorling Kindersley (the company also responsible for the splendid Eyewitness Visual Dictionaries series), it costs \$15.95 and includes the best parts of the classic *John Brookes Garden Book*, published by Macmillan and still available for \$40.

CAN I CLEAN OLD, STAINED BATHROOM FLOOR TILE?

Leonard Silvestri, a tile expert at Jack Corcoran Marble, guesses you have unglazed ceramic tiles, which were commonly laid in bathrooms years ago. Try a scouring powder like Ajax or Comet with a little water and a non-woven abrasive pad like the ones 3M makes. If that method shows promise, the polishing will go faster with a right-angle sander, available in rental stores, fitted with an abrasive pad and your scouring-powder-and-water mix. Wear a good face mask, ear plugs, and goggles, and plug the tool into the bathroom's GFCI (the socket with the red light or button). Also, cover every crack with plastic sheeting; you're going to generate a lot of porcelain dust. All this scrubbing may still not remove 100 years of wear, in which case you can always say your floor has "character."



We have used concrete pavers, which can be laid over a shallow sand bed. They come in dozens of shapes, patterns and colors; call the Concrete Paver Institute (703-713-1900) for information. Pavers are designed to interlock, so they don't need mortar, and also can be ripped up and patched easily.

What's the best material for a path through my yard?

We also like brick paths, but they can be time-consuming to lay straight. If you can overlook the name, Patio Pal (619-449-5050) is an inexpensive plastic grid system that holds bricks in place; it also helps to keep weeds at bay.



If you'd rather have a grassy path, we recently came across a device called Grasspave (800-233-1510). It's a flexible grid of recycled plastic rings; lay it in the ground, fill it with mulch, sand and fertilizer, and grow grass in it. The rings prevent compacting of the soil. We spoke to one gentleman who installed it alongside his driveway last spring and he said his grass survived "even where the wife backs up and musses."

Do you want them in your kitchen?

Of course, the question we get asked most at *This Old House* is: "When can you come and work on my house?" Here's the answer:

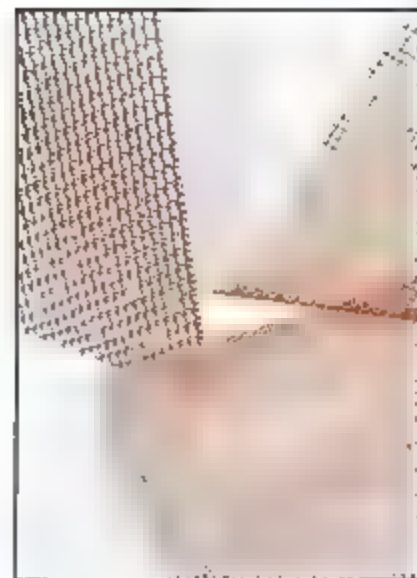
We work on just two homes each year. The summer project, from late spring until Christmas, must be in or near Boston (so we can drive home at night). The winter project (New Year's Day through St. Patrick's Day) must be in a balmy locale, so we can work outdoors. (Previous locations include the Napa Valley—balmy, but the wettest winter in years—Santa Fe, Miami and Hawaii.) We like houses that are historically or architecturally unique. We look for a style we haven't dealt with before—or at least recently. We just finished a colonial and an early 20th-century house, for example, so we are now looking for a federal house. The homeowner must have a large enough budget to finance the

work we deem necessary. That's right. *This Old House* doesn't pay for the project—the homeowner does. (Some materials will be donated, but the homeowner must pay gift tax on their value.) We prefer to use a contractor and an architect of our choice. And the homeowner must endure not only the mess of renovation, but the crew and equipment that come with a TV show. Bonus points: We like homeowners who will invest sweat equity, as well as cash, in the project. Write to: *This Old House*, 125 Western Ave., Boston, MA 02134.



BOOK PHOTOGRAPH BY MONICA BUCK

STEVE AND NORM PHOTOGRAPH BY WILLIAM MERCER MCLEOD



Help! Salt air is corroding my aluminum screens.

Fiberglass screening (the stuff that comes in most new window screens and doors) is the cheapest solution; it runs about 25 cents a square foot and is impervious to almost anything. It's also matte black and fairly ugly. If you're willing to pay 8 to 10 times more, copper, bronze, brass or stainless steel screening are excellent, corrosion-resistant options. (Nickel, monel or titanium screens are also available, if price is no object.) Copper is the softest and will, like brass and bronze, acquire a verdigris patina in time. Stainless is the strongest and most costly, and it stays shiny indefinitely. Bronze, the cheapest, shines like gold when new. All have a metallic "flash," which keeps people from running into them accidentally, and they look good. (We have used bronze screening instead of tempered glass panels to childproof a glass-paneled interior door.) The typical mesh size for insect screening is 18 x 14 (18 holes per horizontal inch by 14 holes vertically) with .009 or .011 gauge wire. If a screen must resist bumps from dogs or kids, you can order square mesh (e.g. 14 x 14 or 16 x 16) with thicker wire (and a bigger mesh size) for better durability. Don't put copper, bronze or brass on aluminum doors; galvanic corrosion will eat at the door.



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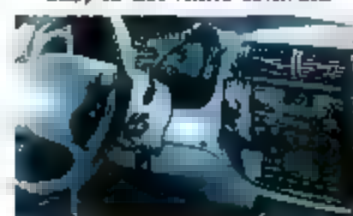
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THE BEST NEVER REST



DO YOU LIKE SCREWDRIVERS WITH INTERCHANGEABLE TIPS?

Steve does. "Better than carrying around a bunch of screwdrivers." We like the hefty, cushioned handles from Latshaw Tools. The top-of-the-line, \$17 to \$20 model shown here has a magnetized shaft and ratchet action. Call 800-833-3125 for suppliers.

How do I sand in tight corners?

This *Old House* director Russ Morash recommends the Fein triangle sander (shown), which he used to refinish the wood windows in his house. "It's the kind of tool you'll wonder how you ever did without," he says. We edge-sanded over 60 feet of white oak flooring with this German-made tool and it never once bogged down. Best of all, it doesn't generate much dust. The Fein, which lists for \$295 (800-441-9878), can be equipped with a variety of accessories—including a scraper, a wood/metal/fiberglass saw blade (this is the one Russ used to trim cedar shingles and that orthopedists use to remove casts) and a carbide grout saw blade—all interchangeable with a few turns of a hex nut.

There are several cheaper detail sanders on the market. After trying them all, we found only the Bosch B7000 and B7001 came close to the Fein's performance. The Bosch sanders have no fancy accessories, and they vibrate a bit more than the Fein, but they are quieter, lighter and cost about half as much. We liked their click-and-turn pads; no need to hunt for a hex wrench. The B7001, new this year, has variable speeds—a big plus for detail work. It lists for \$156 (312-286-7330), which means less than \$100 at discount.

The Fein is a worthwhile investment if you have big jobs and a tight schedule. For those on a budget with less demanding work, either Bosch tool is a big improvement over fingers and sandpaper.



And taxes

If you took a home mortgage interest deduction on Apr. 15, pay attention to this fall's Congressional debates on reducing the interest deduction cap. The Congressional Budget Office calculates that reducing the cap to \$300,000 (it's currently \$1 million) would raise \$34.8 billion over five years. The limit would affect just a tiny percentage of homeowners. Including you?

What's the best material for finials and other decorations on outdoor fence posts?



Pressure-Treated Pine \$4.29	Vinyl \$7.00	Redwood \$12.50	Iroko Hardwood \$47.00 (incl. post cap)	Hemlock \$6.25	High-density Polyurethane \$1.40	Cast Iron \$8.50	Mahogany \$18.00
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FINIALS COME IN A wide range of materials, shapes and prices. We picked a group of 4-inch "cannonballs" to illustrate the point. Interestingly, there's little correlation between price and quality. Among the most expensive we found were some made of poplar, touted in a catalog for outdoor use, even though

this wood has virtually no rot resistance. When we called to order the hemlock finial, we were assured it was treated to resist rot; after we saw it and rechecked, we were told it was not. Our choice from this group: the \$12.50 redwood. It's a reasonable price, nicely made and less likely to split than the treated pine.

ILLUSTRATION COURTESY OF MCFEE, Y'S SQUARE DRIVE SCREWS

EASY RETAINING WALLS?

We have seen modular, interlocking concrete blocks used to make retaining walls and steps in Europe, and have found one company making them in the U.S.: Versa-Lok, of St. Paul, Minnesota (800-770-4525). Installed on a shallow bed of gravel, each block fits into a groove on the one below; mylar-fiberglass pins provide extra security. They are designed so the press of soil behind the wall strengthens the bond between the blocks. No mortar is used; just concrete adhesive to add caps if you wish.



Steve Thomas says, "A nail is only as strong as where it is placed."

SQUARE-DRIVE

SCREWS, which get their name from the square, tapered recess in the head right where you'd expect to find a slot or a Phillips star, have been around since 1908. They were invented by a Canadian, P.L. Robertson, to overcome "cam out" (when a screw-drive bit loses its grip), and are now more available. Norm recommends them for woodworking projects: "They feel more positive, and have less slippage than Phillips screws. I think they could dominate the industry in 15 years."



SUMMER VACATIONS

- **Help build homes for families with Habitat for Humanity.** At two "blitz" events this summer, about a dozen houses will go up in under a week. June 30 in Oakland, California, and August 6 in Detroit, Michigan. Less intense "work camps" take place throughout the summer. Call 912-924-6936 for details.
- **Furniture restoration, tin-smithing, plastering, early American wallpapers and historic painting,** taught in a private "museum village" in upstate New York. Meals cooked in an 18th-century oven; participants sleep on rope beds with straw and feather ticks. Eastfield Village, 518-766-2422. Five-day courses, \$395-425; one-day workshops \$135. Lodging free if you bring ten 10-inch white candles.
- **Log, stone and solar construction,** in the Potomac Highlands of Virginia. Bear Mountain Outdoor School, 703-468-2700. Three- to six-day program \$250-\$650 includes lodging, meals.
- **Home construction and renovation basics,** with emphasis on smart design, plus workshops in cabinet-making, landscape construction and specific building techniques, in the Mad River Valley of Vermont. Yesterday Design/Build School, 802-496-5545. One-week courses, mostly \$800, plus \$275 for food and lodging, not quite double for two-week courses. \$200 for two-day mini-courses.
- **Turn-of-the-century metalworking** at a foundry and water-powered machine shop in California's Mother Lode country, June 2-4. Historic Knight & Co., 209-267-5543. \$350.
- **Timber framing in Maine.** Beginners design, cut and raise a frame in five days. Fox Maple School of Traditional Building, 207-935-3720. \$475.
- **Housebuilding,** with morning lectures and afternoon hands-on at a custom home being built in the Berkshire Hills of western Massachusetts. Heartwood School, 413-623-6677. Three-week course \$950 includes lunches, one-week timber framing, cabinet-making, home design, renovation carpentry for women, \$450.
- **Fine woodworking on the Maine coast,** with hand tools and machines like those in homes and small workshops. Center for Furniture Craftsmanship, 207-594-5611. One-week workshops, \$400; two-week, \$730; housing starts at \$180 a week; \$40 registration.
- **Museum-quality restoration training** at Thomas Jefferson's Poplar Forest, June 12-24. Apply only by writing before May 8 to Travis C. McDonald, Jefferson's Poplar Forest, P.O. Box 418 Forest, VA. 24551. Costs \$250; dormitory rooms for \$15 a day.
- **Furniture making, understanding wood, machine maintenance and jigs,** in rural Indiana "amongst corn, soybeans and basketball goals." Marc Adams School of Woodworking, 317-535-4013. One-week classes, about \$500; weekend workshops, \$250.
- **Fine woodworking in western Massachusetts,** at One Cottage Street School of Fine Woodworking, 413-527-8480. Five-day classes from intro to steam bending, \$300. Two-day workshops, including tuning antique hand tools, \$175.



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Treated Wood

Is it dangerous? And what are the alternatives?

BY JOHN S. SALADYGA PHOTOGRAPHS BY DARRIN HADDAD

W

e love wood, so do bugs and bacteria. Treated with preservatives, wood can last 30 to 40 years or even longer. Untreated decay-prone wood can rot in a year. Builders use treated wood in foundations, garden structures, docks, swing sets—any place wood meets ground or water. In the last few years, questions have been raised about the effect of treated wood on health and the environment. The U.S. Environmental Protection Agency has issued warnings about some preservatives, and gives limited approval to compounds of arsenic, used in almost all treated wood. But at a time when common garden pesticides are blamed for rising cancer rates, it is worth looking at alternatives: naturally resistant woods and man-made lumber.

TREATED WITH WHAT?

The most widely used preservative in residential lumber is chromated copper arsenate (CCA). Ammoniacal copper arsenate (ACA) and ammoniacal copper zinc arsenate (ACZA) are applied on a smaller scale, primarily to wood species found in western states. EPA studies of health risks associated with compounds of arsenic found short-term illness following intense exposure, and a few cases of acute poisoning caused by failure to use precautions in handling the wood.

Ammoniacal copper quat (ACQ) is a new product developed as an alternative for users wary of the arsenates. Considered less toxic than arsenical solutions, ACQ is subject to fewer EPA regulations; however, it has not undergone long-term testing.

Borate and copper naphthenate solutions are commonly sold for home application to untreated wood, or for treating cut ends of treated wood. Both are considered safe if commonsense precautions are observed.

Two older preservatives, pentachlorophenol and creosote, have been ruled too toxic for interior use. Norm Abram says he "wouldn't recommend using them at all, indoors or outdoors."

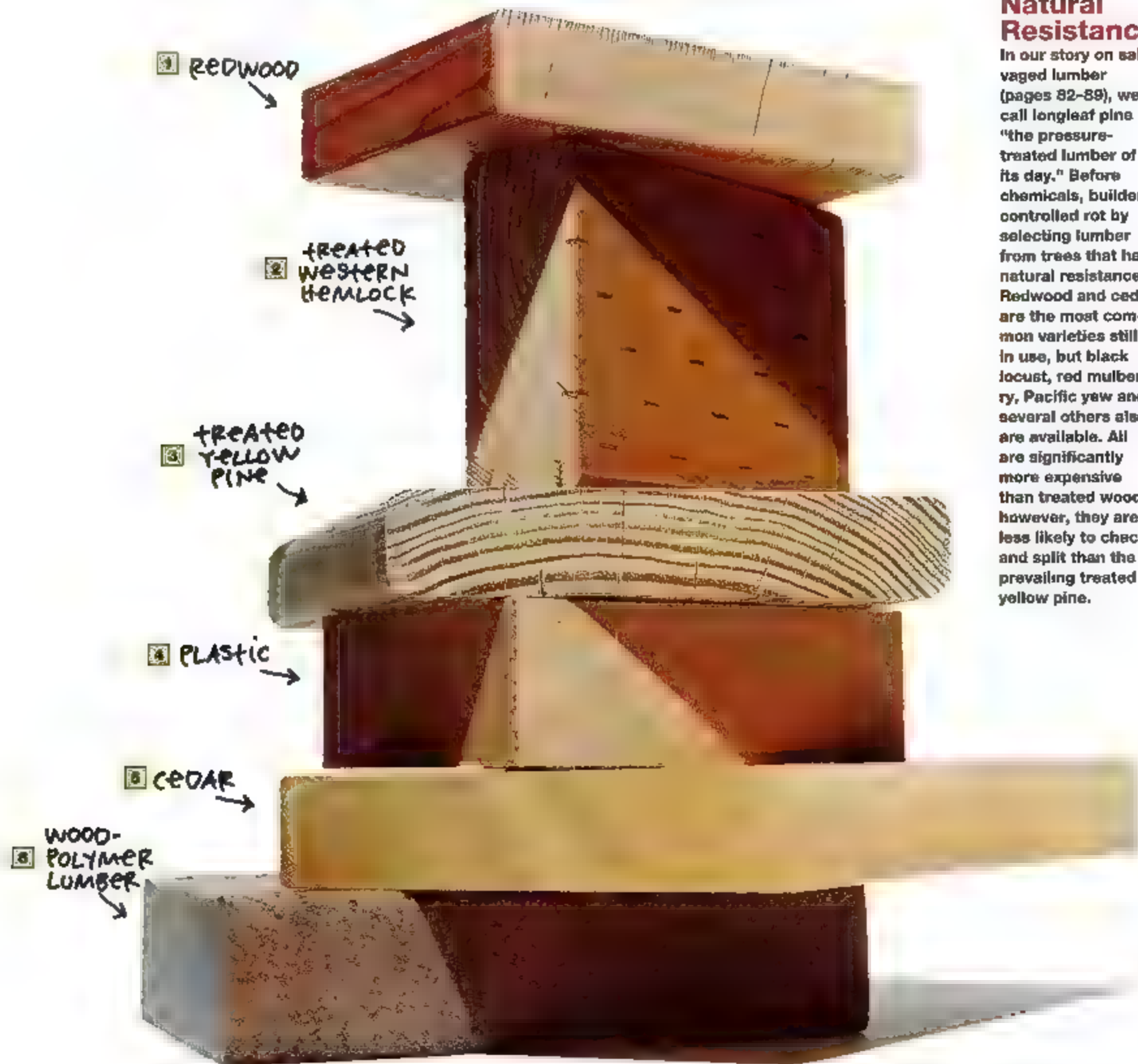
Paint is the simplest "treatment" for wood, but it must be properly applied. This fir baluster was not painted before installation; the raw wood acted as a wick, sucking up moisture.

materials

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materials

rot-resistant lumber



THE WOODS

1. Redwood has natural insect and decay resistance, old-growth more so than second-growth. It is the most expensive outdoor wood in most parts of the country.
2. Western hemlock, a CCA-treated species often used in western states, does not accept preservatives easily, so cuts are made in it to enable the chemicals to penetrate. Price and longevity are comparable to other CCA-treated woods.
3. CCA-treated southern yellow pine is the least expensive

type of treated wood and by far the most widely used.

4. Plastic lumber from reused milk containers costs 60 to 70 percent more than treated wood.

5. Cedar, also naturally insect- and decay-resistant, costs 20 to 30 percent more than treated wood.

6. Trex (wood-polymer composite), a blend of sawdust and recycled plastic, accepts paint or stain. It is currently the only composite lumber for outdoor use. Trex 2x4s cost \$1/foot.

Natural Resistance

In our story on salvaged lumber (pages 82-89), we call longleaf pine "the pressure-treated lumber of its day." Before chemicals, builders controlled rot by selecting lumber from trees that had natural resistance. Redwood and cedar are the most common varieties still in use, but black locust, red mulberry, Pacific yew and several others also are available. All are significantly more expensive than treated wood; however, they are less likely to check and split than the prevailing treated yellow pine.

alternatives

in use



The Teatown Lake Reservation, a nature preserve in Ossining, New York, combined treated wood and plastic lumber in a 700-foot-long boardwalk. The pilings and rail supports are Trimax fiberglass-reinforced plastic. The load-bearing stringers and the railing are CCA-treated southern yellow pine from Georgia-Pacific; the decking and top rail are Mobil Chemical's Trex composite lumber.

PLASTICS

Recycled plastics, generally high-density polyethylene from discarded milk containers, now stand in for wood in many applications. But the industry is so young that uniform test procedures and manufacturing standards are just being developed. As a result, the quality and performance of much of the plastic lumber on the market ranges from uncertain to questionable. It comes in many colors and standard lumber dimensions, and can be tooled like wood. You can use power tools on it, but carbide-tipped saw blades, router bits and drills are recommended because of its density; we also recommend using special fasteners. Among the drawbacks is the price, more than half again as much as treated wood. Plastic lumber is heavier than dry wood of the same size. It is not considered a structural material and should not be used in load-bearing applications. Around the house, it is limited for now to deck and dock boards, railings, fences and landscape ties.

Buying and Using Treated Wood

If you plan to purchase lumber treated with CCA, ACA or ACZA, select high grades, premium wood cracks and splits less. Note the preservative retention level stamped on the wood or a tag—the preservative, by weight per cubic foot, that remains after treatment. A level of 40, rated for ground contact, means there is almost one-half pound of preservative per cubic foot of wood. Be wary of wood marked "treated to refusal"; the refusal zone of some species is just below the surface, leaving the inner wood unprotected.

Read the EPA's consumer information sheet (posted at the lumber yard). Its commonsense instructions: avoid contact with food or drinking water; don't burn wood; avoid inhaling dust; work outside; wash hands before eating or smoking.

Treated wood is shipped direct from treatment to lumber yards; preservatives may still be leaching from the surface. When you purchase the lumber, make sure it is dry. Wear gloves when stacking or carrying treated lumber (but not when using power tools). After construction, wait two or three weeks and apply two coats of water-repellent sealer with UV inhibitors—more on cut ends. Stains and paints can be applied over sealer, but let the wood dry at least three months and try to keep it out of the sun. Prime before painting. Water repellent sealer lasts about a year, a penetrating oil stain three to five years and a good paint job six or more

Circular Saw

Norm Abram teaches us how to use a common power tool. **BY MARK FEIRER**

PHOTOGRAPHS BY CARLTON DAVIS

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And with Hurd InSol-8 windows, you can even fine tune your home to dramatically reduce common outside noise by up to 95 percent. InSol-8 also insulates to R-8* and blocks 99.5 percent of the sun's harmful UV rays—the leading cause of

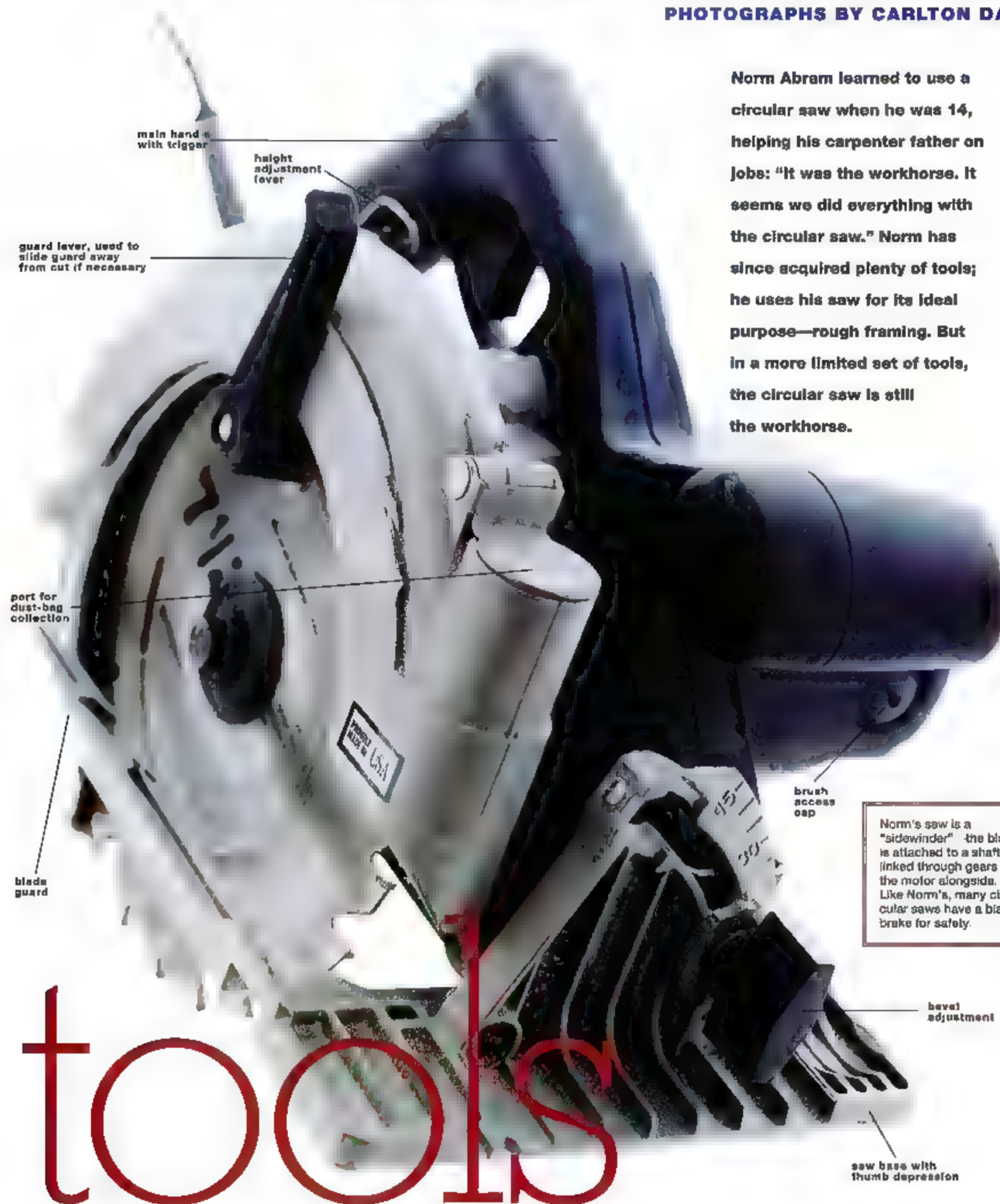
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Norm Abram learned to use a circular saw when he was 14, helping his carpenter father on jobs: "It was the workhorse. It seems we did everything with the circular saw." Norm has since acquired plenty of tools; he uses his saw for its ideal purpose—rough framing. But in a more limited set of tools, the circular saw is still the workhorse.

Norm's saw is a "sidewinder" — the blade is attached to a shaft linked through gears to the motor alongside. Like Norm's, many circular saws have a blade brake for safety.

tools

Circular Saw

the blade:

Masonry Blade

A toothless blade, this one is made from an abrasive material that grinds rather than cuts, making it ideal for scoring pavers or for cutting bricks and concrete blocks.

Plywood Blade

Unlike construction blades that gobble wood, the steel teeth of this blade nibble. It won't splinter thin surface veneers, so it's ideal for cutting plywood paneling and cabinet plywood.

Chisel-Tooth Steel Blade

This blade probably came with your saw. It cuts fast when sharp and does a decent rip cut and cross cut. Few pros would swap their carbide blades for easily-dulled steel blades.

40-tooth Trim Blade

Premium carbide-tipped blades with 40-60 teeth are finish blades; they cut more slowly—but more smoothly—than similar blades with fewer teeth.

Decking Blade

Thin carbide teeth with raised shoulders cut smoothly through pressure-treated lumber and other decking woods. Radial slots in the blade reduce warping.

General Purpose Blade

Some blades cut faster, some smoother, but this 20-tooth carbide blade combines speed and long life with a smooth cut. They must be resharpened at saw shops, but a carbide blade is worth it. It's Norm's workhorse.

Remodeling Blade

Also called a demolition blade. Squared shoulders boost the shock resistance of the few (12 to 14) teeth on this carbide blade; use it on nail-embedded wood.

buying

Circular saw blades are usually 7¼ inches in diameter. A decent general-purpose carbide model costs \$8 to \$10 and will stay sharp much longer than a steel blade. Norm likes thin-kerf blade versions. They cut faster with noticeably less effort. New carbide teeth should be smooth and shiny, not chipped or pitted; check them with a low power magnifying glass.

care

To protect brittle carbide, store each blade in an old mailing envelope or pocket folder (they're great for labeling, too). A dirty blade isn't safe to cut with; use oven cleaner to dissolve gum and pitch after you remove the blade from the saw.

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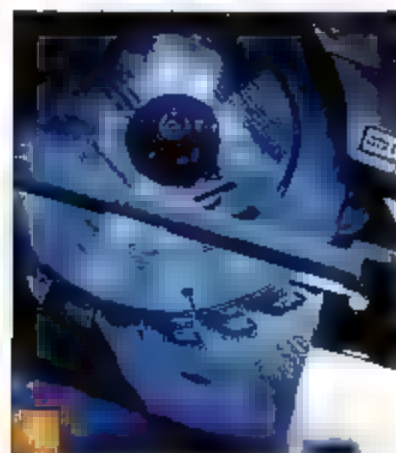
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TOH 595

safety and use

crosscutting a 2x4

A few seconds, nothing more—that's what it takes to slice through a 2x4. Do it wrong, though, and you'll remember those seconds forever. Norm's technique may seem overly cautious, but 30 years of accident-free work with the saw is a good endorsement. Proper blade depth is crucial; it minimizes kickback and leaves fewer clawing teeth exposed beneath the cut. To set the depth (1), unplug your saw and rest the base on a 2x4 with the blade next to the wood. Pull the guard back so you can see the blade's teeth, then lock the saw at a depth that leaves the lowest tooth no more than about 1/4" beneath the wood. Mark a cutline (2), then saw freehand or (as Norm does) use the square as a guide. (3) Why guide a simple crosscut?



"If you turn the saw even slightly after it's partway through the cut, the blade binds up and the saw can kick back at you." A bonus for beginners: the square also ensures a square cut. Whatever your method, never lift the saw when the blade is still moving. Instead, push it completely through the wood in a single, fluid motion (4) until the offcut drops free. Generally, Norm says, he keeps the broadest part of the base on the "keep" part of the wood, unless cutting small blocks. (Another tip from Norm: if you rock the saw forward and backward slightly as you get ready to cut, you can feel the front of the base slap against the wood; that's when you know the saw is flat and it's safe to cut.)

crosscutting plywood

Plywood can be more difficult to crosscut than dimensional lumber. The pieces are big, the cutlines are long, and the wood is more likely to splinter. Kickback is a particular risk because plywood flexes readily, so proper support is important. Norm lays several 2x4 supports over his sawhorses; add more if the plywood is less than 1/2" thick. To minimize splintering, cut with the good face down—because a circular saw cuts on the upstroke. After adjusting the blade depth (1), Norm sets up a self-clamping straightedge to guide



the saw (2). You can get the same results with a pair of C-clamps and a stiff board. As you cut, be aware that the saw blade will graze the top of each 2x4. Be sure to keep your free hand well clear of the cut (3) no matter what you're doing. To keep from losing control of the saw, he sometimes moves around to continue the cut on the other side of the plywood. (4) Never lift the saw or pull it backwards while the blade is moving—that's asking for kickback. If the blade binds or your cut goes awry, stop the saw before repositioning it.

ripping a 2x8

To cut a lengthwise strip from dimensional lumber without using a table saw or a rip fence, clamp the board to a sawhorse, then mark the outline with a combination square (1). The trick is to move the pencil at the same rate as you move the square. The line will serve as a rough



guide, but the real guide is "the human fence"—in the photo, Norm's knuckle (2)—which rides along the edge of the wood while his thumb guides the edge of the saw's base. When Norm reaches a sawhorse, he moves it back slightly before continuing the cut (3).

ripping plywood

When he's cutting a lengthwise strip with a circular saw, Norm supports the plywood on at least four 2x4s laid on top of the sawhorses. They run parallel to the cut, with the innermost pair of 2x4s just inches apart on either side of the cut line. To prevent the blade guard from "hanging up" on the



edge of a thin sheet of plywood, Norm lifts the guard just enough to clear the wood as he starts the cut (1), then releases it as soon the saw base is past the edge (2). To complete the cut, he stops the saw and repositions himself to maintain a safe, solid stance (3).

The saw's power and portability are both assets and liabilities. If its blade gets trapped in a cut, the whole saw will kick back violently—at you. Take Norm's advice and always stand to the side of the saw, just in case. Check frequently to make sure small pieces of wood haven't wedged the blade guard open. If your saw doesn't sound right, shut it off and find the problem. It could be a dull or dirty blade. To keep your saw fit, brush off the dust so adjustment levers are clear. If your saw binds or your cuts aren't square, sight down the base periodically to see if it's square and parallel to the blade. Check all knobs and screws regularly to make sure they're tight, and check the electrical cord for fraying. What if you cut through the cord? (Everyone does eventually, says Norm.) Don't repair it, just replace the whole thing. If a saw sputters or sparks, check its brushes. These small blocks of hardened carbon can wear out after a while. Norm's saw makes brush changes easy: unscrew each of the access caps, remove the old brushes (be careful—they're spring loaded); and slip in a new set.

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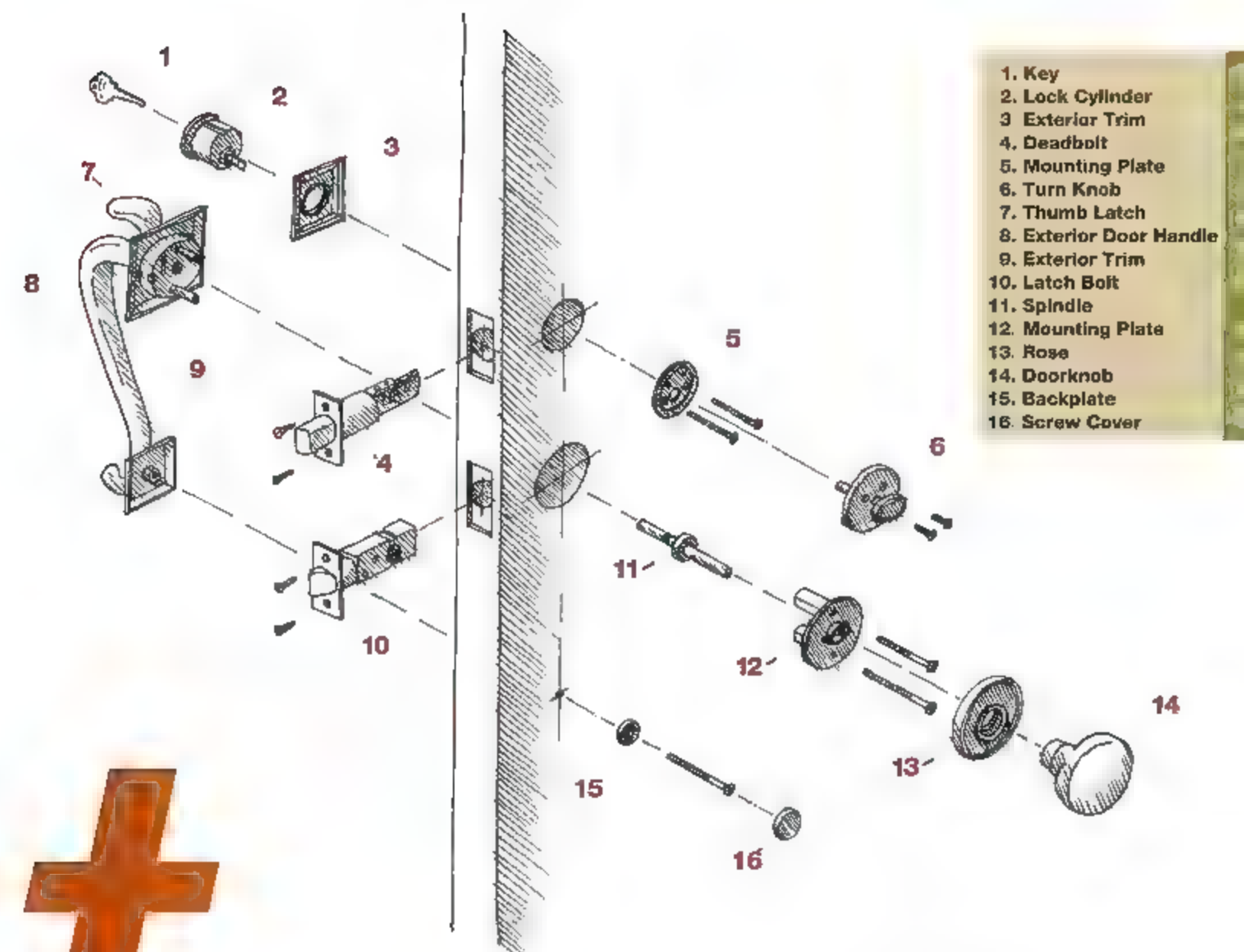
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Cylinder Locksets

A guide for the (careful) amateur carpenter. **BY PETER LEMOS**

ILLUSTRATION BY JOHN MURPHY

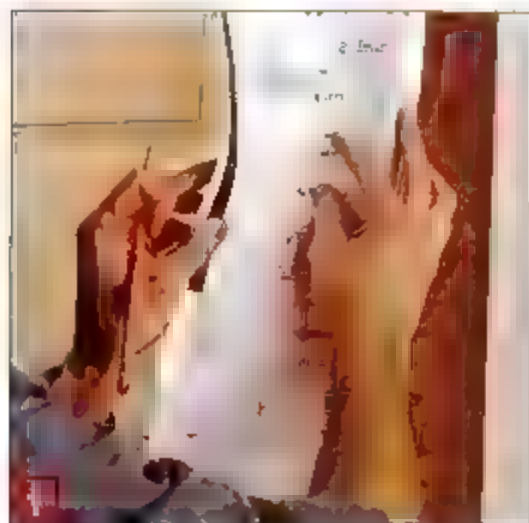


t

old house in Maine I bought was owned by a man who had lived in it for 20 years without ever having locked the doors. He had no idea where the keys were and wouldn't have used them if he had. He was a man who venerated the past, cutting his grass with a scythe and heating with wood. He also apparently had nothing worth stealing. I did. A hopeless creature of the present, I quickly installed new locks—a task made easier now that manufacturers make cylindrical versions which just need a hole drilled into the door. (The old mortise style demands a lot more complicated carpentry.) The installation process is as satisfying as it is simple. The result—a good, solid lockset—gives a home an anchor that helps to welcome friends but also keeps intruders out.

fixtures & fittings

Installing a Lockset



1 Find the most comfortable spot for the doorknob by standing next to the door and holding out your hand, or by copying measurements from other doors. Mark the spot with pencil; tape the manufacturer's template in place over it and mark center and all screw holes. Repeat on other side.



2 Accurate drilling is essential. The spade bit or hole saw must stay perfectly horizontal. If it angles, the lock won't line up. Make sure all the hole saw teeth or spade bit points touch the wood evenly as you begin. Drill face holes halfway through, stop, and finish from the other side.



3 When you drill the edgebore hole for the latch assembly sideways into the door edge, a pilot hole helps to keep your spade bit centered at the midpoint between the door's two sides. Check that drill is straight in all dimensions by holding a straightedge at right angles to door.



4 To cut a mortise for the latch plate in the door edge, use the plate itself as a template and score the outline with a knife. With a chisel, score across at 1/4-inch intervals to desired depth, then clean out. Work from the center of the mortise down to the bottom, then work up to the top.



5 Drill pilot holes for all screws or bolts as you install each one. This prevents screws from breaking off as they're installed. If you're using extra-long screws to secure the strike plate that fits in the doorjamb, make sure you have the right drill bit for the pilot holes.



6 You may have to make a few adjustments after installing the handles, locks and corresponding strike plates. Open and close the door until all latches and deadbolts operate smoothly and easily. You can adjust latch frames or strike plates by shimmying with thin cardboard.

getting ready

A forged brass lockset costs \$250 or more, a solid wooden door \$300 to \$500. Drilling a hole in the wrong place or at the wrong angle could damage either or both. Start by tapping a couple of opposing wedges under the door so it can't move. All cutting tools must be sharp: our carpenter, Jay Jones, used an electric drill, 2 1/2-inch and 1 1/2-inch hole saws, a 1-inch spade bit (the Speedbor 2000 is our choice), 1/4-inch and 3/16-inch bits, a 1-inch chisel, a hammer, a utility knife, a

Phillips screwdriver and a tape measure. A portable drill guide and a vix bit or centering guide also can help. If you have a lot of doors, a lockset boring jig might be worth the \$175-\$250 investment. Avoid expensive mistakes by double-checking measurements and all the instructions included with the lockset. If you have any doubts, ask the door supplier to send it predrilled to your lock's specifications and install the hardware yourself following steps 5 and 6.

PHOTOGRAPHS BY WILL AM VIZQUEZ

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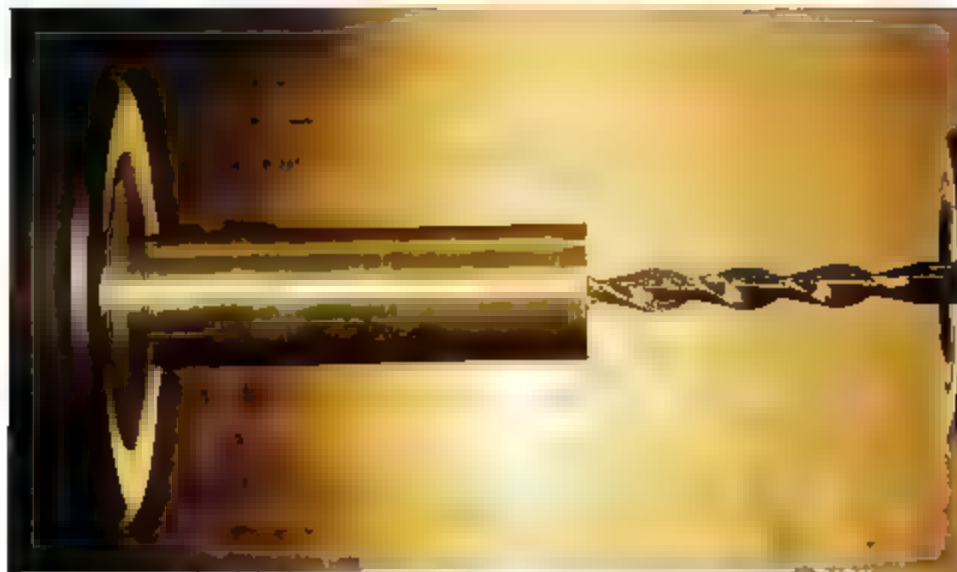
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fixtures & fittings

The Making of a Lockset

THE BEST LOCKSETS are made from solid forged brass. Cheaper processes, such as casting brass, can produce tiny bubbles that diminish a component's durability. Forging compresses the brass under heat



A numerically-controlled drill bores out raw brass stock for this lever.



A computer-controlled lathe bit further refines a door lever.



Freshly forged and polished door roses await a fast lacquer finish.



Brass billets are taken from a 1,500-degree oven before forging.

and immense pressure up to 600 tons to create a stronger, smoother and more dense metal. The single cylinder lockset we installed started out as almost six pounds of solid brass rods, which were forged, machined, fitted, finished and tested for smooth operation. To see it done, we visited the Baldwin Hardware Corporation's brass factory in Reading, Pennsylvania, where state-of-the-moment robotics combine with centuries-old craftsmanship to create the many components that go into a lockset.

a burglar's view

Jeffrey K. knows more about locks than most locksmiths do. At 17, he is a veteran burglar of more than 100 homes and has already spent three years behind bars. He spoke to me just after finishing his first stretch in adult prison. Jeffrey says he always checks first to make sure a house is empty and doesn't have a burglar alarm. Then in quick succession he will use a crowbar, a screwdriver, a credit card, even a paper cup to try and pick your lock. Or, he says, "I can just lean aga

nst a door hard, especially if I don't want to make a lot of noise, and the doorjamb will split." If nothing works—which he says is very rare—he gives up and moves on. "I try not to take much time on one thing; if I can't get in I'll go someplace else." To keep Jeffrey K. and his colleagues out, choose a lockset with a hardened steel deadbolt that has at least a 1-inch throw and a steel-reinforced strike plate. Install the strike plate and any hinges with screws anchored in nearby studs.

SAFETY AND CHILDREN

For quick exits in emergencies, an interior turn knob on any deadbolt lock is best, especially in homes with children. Better still, some manufacturers—Baldwin and Schlage among them—offer an interior lever that simultaneously unlocks the deadbolt and latch bolt. Doors with glass, however, are vulnerable—burglars can simply smash and reach inside for entry. A frequent solution is to use double cylinder deadbolts with keyed interior locks on these doors. This violates many building codes, and for good reason: Keys are usually stored away from the door for security. In a fire, you might not find them in time. Our friend Julia Child came up with the best solution we've seen so far: she replaced her door glass with Lexan, which is virtually unbreakable.

PHOTOGRAPHS BY WILLIAM VIZDUEZ

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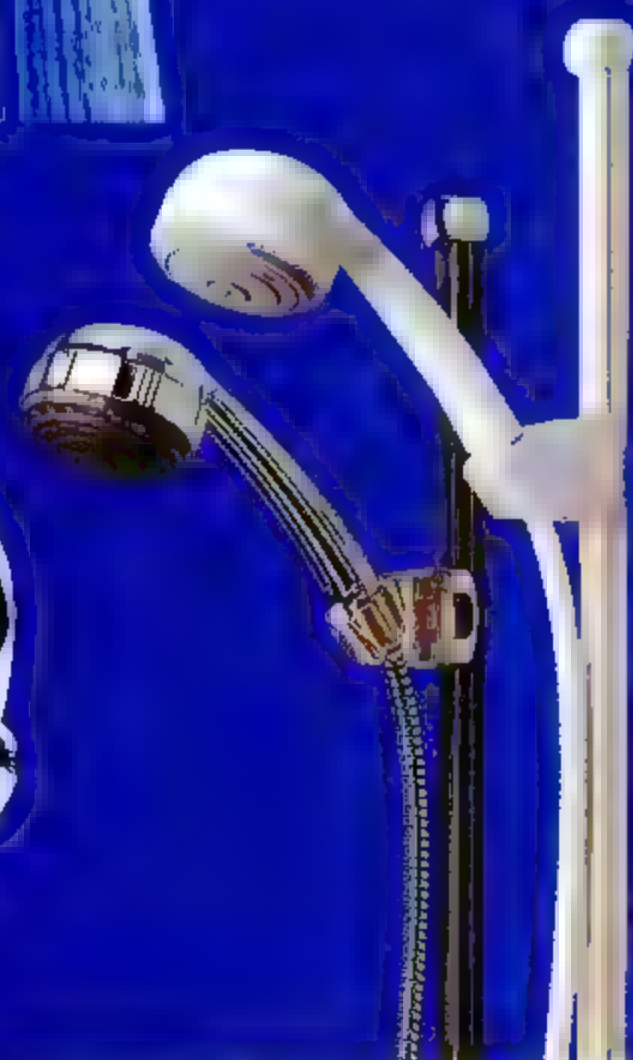
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Outdoor Lighting

Twelve-volt systems make it possible to lay underground cable without fear.

BY WILLIAM A. MARSANO

advice
from
an
expert

Tom Wirth, landscape architect for *This Old House*, says, "Most mistakes involve over-lighting. The photos in manufacturers' brochures can make a house resemble a penal colony."

subtle "effect" lighting on house and grounds with safety lights at entrances, paths, stairs or grade changes.

4 Don't overlight older, taller homes: they end up looking out of place. If you overlight their grounds, a house left in darkness can take on a sinister, Charles Addams look.

5 Don't install so many lights along a walkway that it resembles an airport runway. Except for very long paths, one fixture at the front and one at the sidewalk should be enough. For light in between, experiment with "moonlighting" fixtures mounted high in trees.

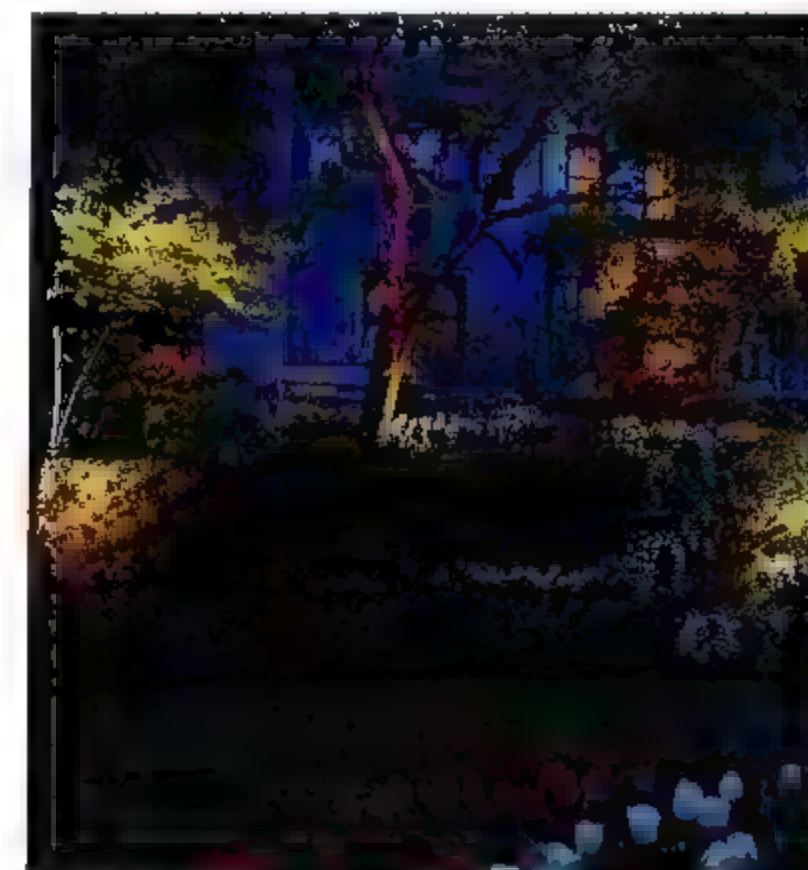
6 Don't shine lights directly onto a neighbor's house. If there is any light spill, make sure neighbors won't mind.

7 Don't emphasize the fixtures instead of their effect. They should be unobtrusive night and day.

We will tackle almost any home repair except electrical work. We have

I will tackle almost any home-improvement project—except electrical work. We have a healthy respect for electricity. So we were happy to learn about low-voltage garden lighting. It's cheap, it's easy to install, and best of all, it eliminates the two big drawbacks of high-voltage work: shocks and restrictive local electrical codes.

The essential item here is the step down transformer, which alters a home's 120 volt alternating current (AC) to 12 volt direct current (DC). Low voltage DC is too weak to kill or even seriously hurt you—which is why it's used for children's train sets and small household appliances. But it's strong enough to light your garden. If you pay attention to the bulbs you use, the size of the connecting cable, and the voltage drop (see the next page) for an explanation. The transformers may even come with timers, dimmers and photosensitive switches so you can get exactly the effect you want.



Rule #7: Fixtures should be unobtrusive

1 Don't install uniform bulbs everywhere. Vary the breadth, depth (or "throw") and intensity. A very narrow spot can throw a focused beam about 30 feet; a very wide flood fans soft light into a cone up to 40 feet wide. There is a wide variety to choose from.

2 Select the right fixture for function and appearance. On a stairway, for example, use small lights to evenly illuminate each step, rather than a large globe that casts tricky shadows.

3 Don't try to turn night into day. If you overlight, even for safety, you can create "hot spots" of harsh light. Mr.

process

the equipment

TRANSFORMERS range from 25 to 600 watts in output. To choose one, add the wattage of all the lights you'll need. The transformer wattage should be about 20 percent higher than this number—so you can add a light or two later. **OUTLETS** outdoors must be weatherproofed and have

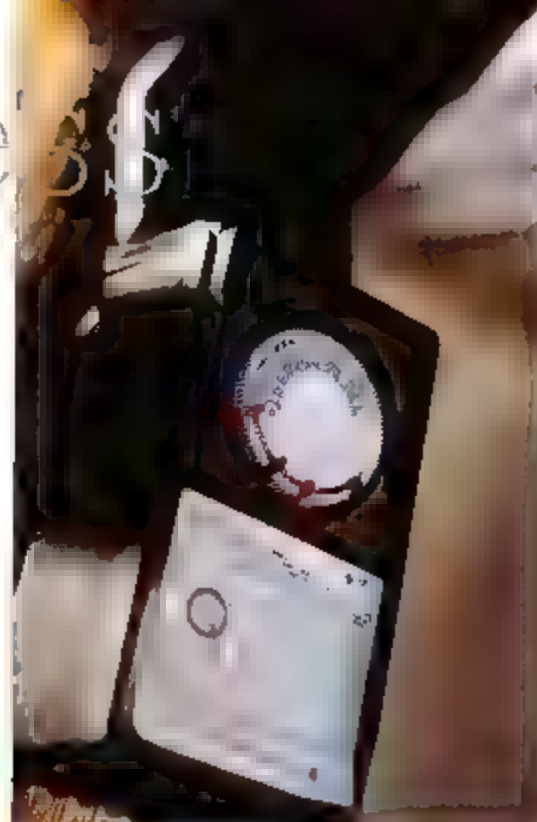
GFCI (ground fault circuit interrupt) features. Inside, a regular outlet will suffice. Never use extension cords, even with GFCIs, between outlet and transformer.

CONNECTORS are simple plastic slides with metal teeth. Clamp them shut on the cable (for heavier cable, this takes some force); the metal teeth penetrate the insulation to tap current.

CABLE (wire) is measured by gauge: 10, 12, 14, 16 and 18. The lower the number, the thicker the cable, and the more current it carries. Use landscape lighting cable—it's not affected by sunlight, which makes regular cable brittle, and its insulation is self-sealing, so if you move a fixture, connector holes will close up.

FIXTURES should be made of sturdy materials—thermoplastic, ceramic, cast aluminum or copper—so they won't rust and will survive the occasional swat from a garden tool.

BULBS, typically 7.5 to 75 watts, consume less electricity than household bulbs and are smaller and longer-lasting. Unlike glass base bulbs, they won't corrode as metal-bases do. PAR lamps (weatherproof bulbs with reflectors) go right into a socket; no fixture required. Most halogen bulbs need protective lenses.



Mount the transformer (above) at least one foot above ground somewhere on the house, to make late-night adjustments easier. Unlike 110-volt cable, which must be sheathed and deeply buried for safety, 12-volt cable (below) can be slid into a slit made by a straight-edge spade.



how to

First, design a lighting plan. On graph paper, make a scale drawing of your property and decide where you want the lights to go. Then trail a clothesline from the transformer to all proposed light sites, marking each change in direction with rot-proof stakes. Make straight runs where possible, avoiding planting beds and borders that will be rototilled. Measure the clothesline to figure out how much cable to buy. Then, with the transformer unplugged, attach the cable according to manufacturer's instructions. Run the cable—above ground—along the staked route. Attach the fixtures, add bulbs, wait until nightfall and then plug in the transformer. Adjust the lights until you're happy with the results.

To bury the cable, use an edger or a straight-bladed spade. Cut through the turf at a 45-degree angle at least four inches deep (enough to protect the cable from lawn aerators). Pry up the lip of turf and push the cable all the way in. For extra safety, bury yellow plastic construction ribbon with the cable to alert diggers (cut wires won't injure them, but splices will be needed). If there's extra cable at the end, don't cut it off—you may want to add a couple of fixtures later. Just seal the end with electrical tape, and bury it. Drive the marking stakes to ground level so you can locate the cable later.

VOLTAGE DROP

Because of cable's inherent resistance, voltage drops along its length: the end-of-run lamps will be dimmer than those at the beginning. Some drop is acceptable, and inevitable, but you want to limit it—so look for a voltage drop of less than 2 volts out of the 12.

Voltage drop is calculated as follows: Total nominal wattage (TNW), or all your lights combined, multiplied by feet of cable and divided by the appropriate cable-resistance constant.

GAUGE	CONSTANT
18	1,380
16	2,200
14	3,500
12	7,500
10	11,920

Example: You have six 27-watt lamps, and your run is 120 feet. With 12-gauge cable, whose resistance is 7,500, your voltage drop will be greater than 2: $(6 \times 27 = 162 \times 120 = 19,440 \div 7,500 = 2.592)$.

Too much. You can reduce voltage drop in one of three ways: use lower-wattage lamps for smaller TNW; use a heavier gauge of cable; or move the transformer to a more central position and divide the cable into two 60-foot runs of three lamps each.

PHOTOGRAPHS BY GARY MOES

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AS THOUGH A CLASS OF FIRST GRADERS WASN'T WILD ENOUGH ALREADY.

You might think a roomful of 6-year-olds would be difficult to keep under control. But at Winn Brook Elementary of Belmont, Massachusetts, the first graders are perfectly well behaved. It's the classroom itself that's wild.

With help from their teacher, Donna LaRoche, the students at Winn Brook have transformed their class into a life-like rain forest habitat. Complete with vines and waterfalls and scary creatures that are half-jaguar, half-kid.

Ms. LaRoche believes "constructivist" lessons such as this help create "a community of joyful learners." Not to mention a community of South American jaguar fans.

For planting seeds of inspiration in the minds of those who, someday, may help the rain forests grow, we at State Farm are pleased to present the Good Neighbor Award to Donna LaRoche, along with \$5,000 to her school.



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USING A PROPANE TORCH

Portable, reliable and cheap, a propane torch heats copper quickly. One with a self-igniting tip (below) keeps your fingers away from the flame when lighting up.



TORCH BY DARRIN MADDOX

S

ince its introduction in the 1920s, copper tubing has been the preferred material for supplying water to your home. Copper doesn't taint the water. It is accepted by all the building codes in the United States. It doesn't corrode (unless you have well water with an extraordinarily high level of sediments, acids or alkalis). And skilled plumbers are not the only ones who can join or repair it; homeowners can, too.

Brass and galvanized iron pipes, which preceded copper in residential plumbing, are joined by tricky threaded ends. The best way to join copper tubing, on the other hand, is by soldering or "sweating" the fittings together to form a metal-to-metal bond. Soldering is not difficult. Once you get the hang of it, it takes less than a minute to make a strong, leak-free joint that will last indefinitely. And it's a satisfying process. As Daniel Magnus, one of our staff members, says, "Learning to solder was the most liberating moment of my homeowning career."

Soldering Copper Pipe

Richard Trethewey demonstrates a way to fix your plumbing.

BY THOMAS BAKER PHOTOGRAPHS BY DAN BORRIS

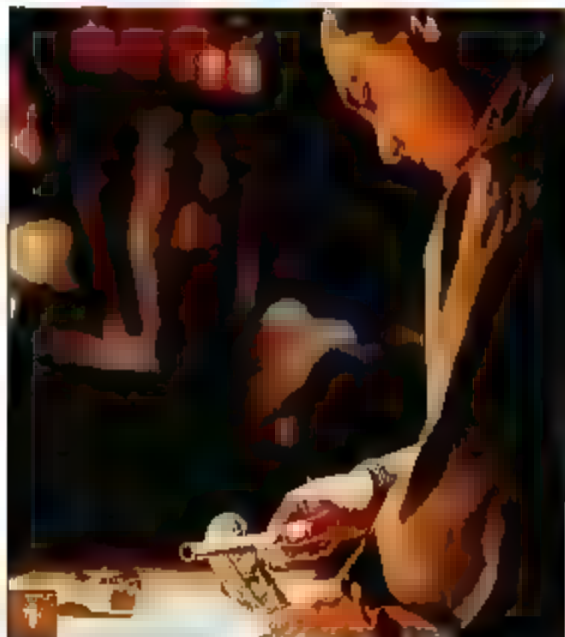


A shower faucet shows the complexity possible with soldered joints.

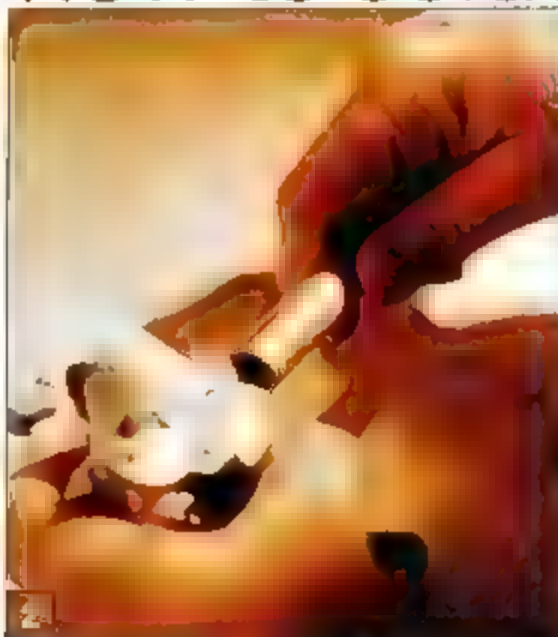
COPPER TUBING The pipe used in home plumbing is 99.99 percent pure copper, with a trace of phosphorus. It comes in lengths ("hard drawn copper") or in flexible, annealed coils ("soft copper") that have been heated to relax the metallic bonds. Drawn copper for residential use comes in three color-coded varieties, M (red), L (blue) and K (green), which indicate wall thickness for a given diameter. Most residential plumbing uses 1/2- or 3/4-inch type M tubing. (Sizes are nominal: a half-inch tube has a 1/2-inch outside diameter; a 3/4-inch tube, 3/4 inches.) Soft copper (types L and K only), is used where flexibility is required, such as underground.

technique

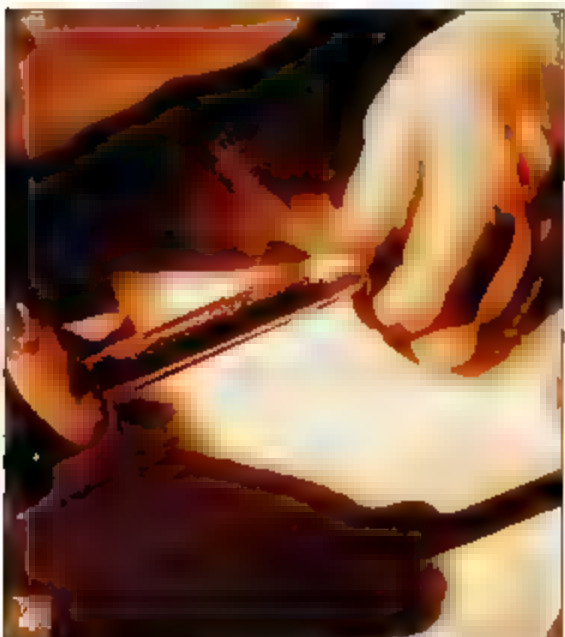
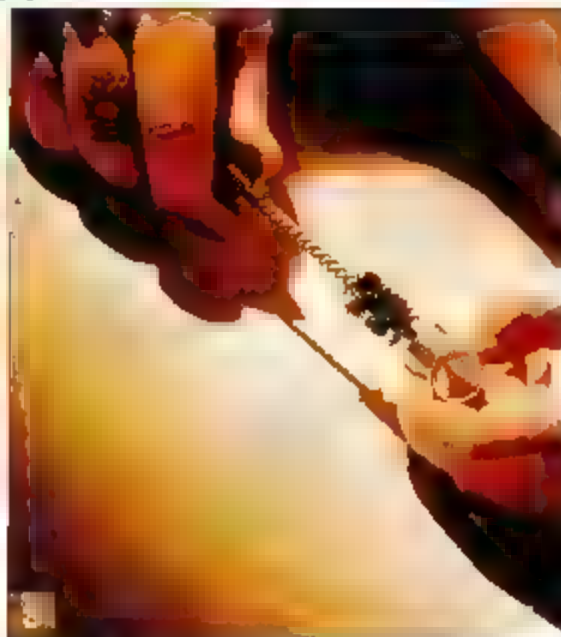
how to solder



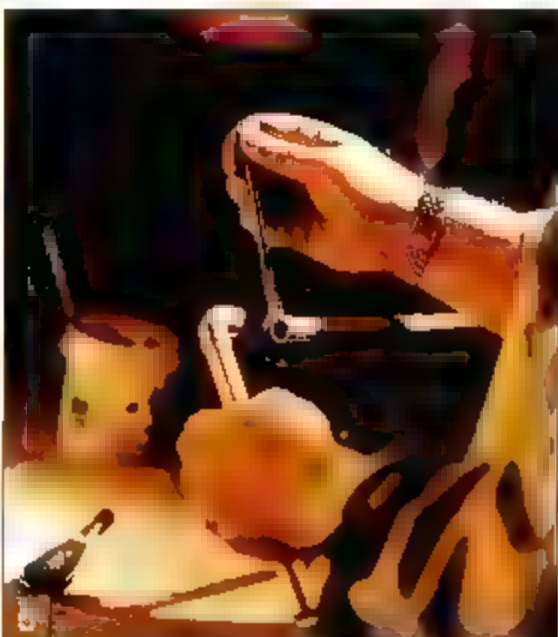
The secret to soldering is to have a clean joint with a perfectly round cross section. First, measure and mark a length of tube (1). Rotate a tubing cutter around the tube, tightening the handle slightly at each turn to avoid flattening the tube. Remove the burr inside with the triangular reamer (2) that folds out of the cutter;



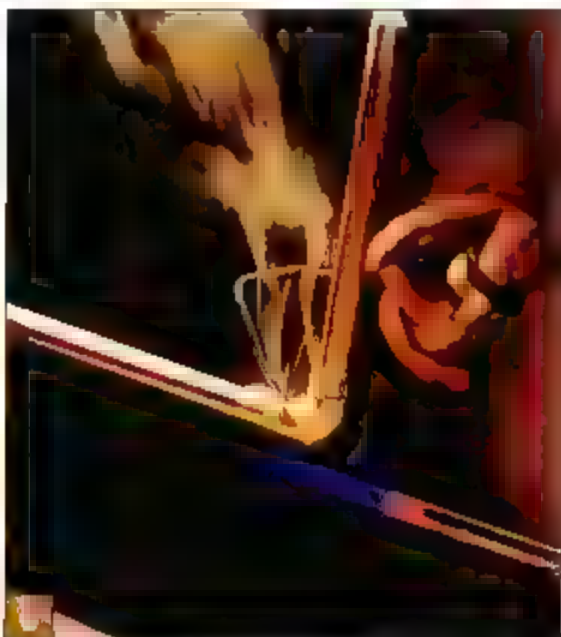
keep both edges of the reamer in contact with the tube so the tube stays round, and don't push too hard or the end will flare. Clean the inside of the fitting with a fitting brush (3), turning it clockwise to avoid breaking the wire bristles. Use a brush the same diameter as the tubing; don't touch the surface afterward.



Polish the outside of the tube with fine-grit emery cloth (4). With a disposable acid brush, coat both mating surfaces with a thin layer of flux to neutralize oxides (5), then insert the tube into the fitting. Clean, flux and fit all pieces together. Uncoil about 7 inches of solder wire; bend a 2-inch crook near the end. Holding a propane torch at an angle to the fitting, train the innermost blue flame on



the fitting. When the flux bubbles, touch the tip of the solder wire to the side of the joint opposite the flame (6). (Never put flame on the solder itself.) When the solder liquefies and is sucked into the fitting, remove the flame and run the tip of the solder around the joint until it is filled. Gently wipe the joint with a wet cloth to set the solder, then wait until all parts have cooled.



safety precautions

Protect nearby materials with a woven fiber heat shield, available from plumbing supply stores. Water and hot solder don't mix. If the inside of the tube is wet, stuff a wad of white bread (no crust) into it. The bread absorbs drips

while you're soldering, then dissolves when the water is turned on. Flux is caustic; don't get it on your skin or in your eyes. Wipe all residue off joints (it may corrode the copper); and flush plumbing before drinking water

if it leaks

Cut the tube a few inches from the leak, reheat the joint and remove the tube stub from the fitting. Be careful; it's hot. Using a straight coupling to bridge the cut, clean, flux and refit the tube and fittings as before, then resolder.

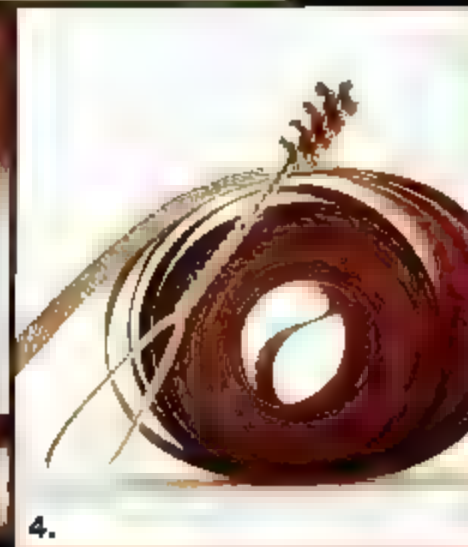
the solder itself

Solder is tin-

based alloy that fuses with copper. Plumbers used to use 50/50 solder—half tin, half lead; since 1986, the solder (and flux) used for drinking-water plumbing in the United States must be lead free. Look for solders combining tin, copper and silver; avoid tin-antimony solder, which is harder to use. A UPC/APMO marking on the spool indicates that the solder has been tested and can be used in drinking-water systems.

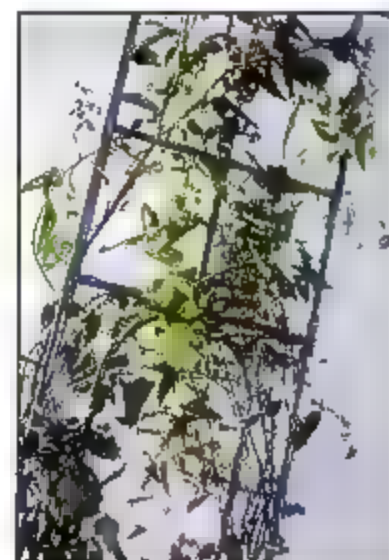
the parts

1. Solder wire
2. Adapter (female solder cup with female threads)
3. Tee (with three female solder cups)
4. Emery cloth ("scratch") and fitting brush
5. 90-degree fit elbow (female solder cup with male solder end)
6. Tubing cutter
7. Fitting adapter (female solder cup with male thread)
8. Flux (soldering paste) and disposable acid brush



...OR BUILD A TRELLIS

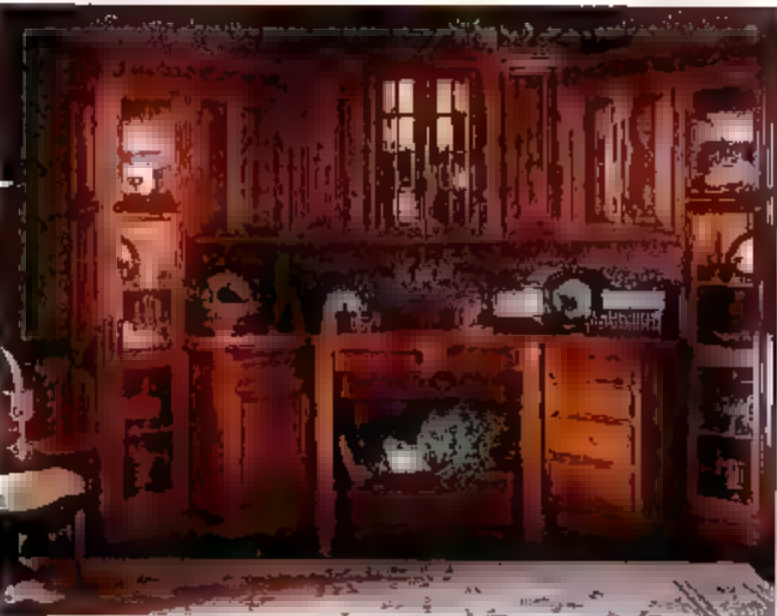
Richard Trethewey, our plumbing and heating expert, laments that his handiwork is hidden behind walls. So we designed a garden trellis, which he made using off-the-shelf fittings and half-inch copper tubing. Markings were removed with lacquer thinner; a solution of ammonium chloride and copper sulfate gave the shiny copper an aged look. It's perfect for training vines. It won't corrode, like a wooden trellis. (And the Brooklyn Botanic Garden assures us that copper has no ill effects on soil or plants.)



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ILLUSTRATION BY JAMES STEINBERG

Is Your Contractor Insured?

Liability and workers' compensation. BY VICTOR MOORE



A friend of mine, a successful contractor, keeps an old English poster tacked to his office door. "Ninety five percent of accidents happen in the home." He got it from a London subway in the 1960s and says "It was actually part of a birth control campaign. I thought it would be good for reminding me that this job can be dangerous."

Accidents happen on the best-run construction jobs. (Read the story of Norm Abram's fall during the building of his house, page 125 in this issue.) If a contractor is uninsured, the homeowner is liable for any property damage or medical costs that ensue. If you want to protect yourself against this kind of risk, ask every contractor who works in your house to carry both liability and workers' compensation insurance.

LIABILITY INSURANCE covers bodily injury and property damage—to anyone or anything—that occurs as a result of the contractor's work. If an open bucket of roofing tar gets knocked off the roof and into the neighbor's greenhouse (or onto the neighbor), the general contractor's liability insurance should pay for the damages. It doesn't cover faulty workmanship (if the roofer installs the wrong shingles, or just does a lousy job, liability insurance is no recourse), it doesn't cover injuries to workers on the job.

WORKERS' COMPENSATION INSURANCE covers injuries to the contractor and to his or her employees and subcontractors. If the roofer, not the bucket, falls and injures his back, workers' comp, not you, will pay the medical bills.

Proof of insurance is in the form of a certificate

issued free of charge by the insurer. Ask your contractor to produce one before signing a contract, check it against our example and then file it away safely for reference.

Don't accept a photocopy of a certificate issued for another client; it should cite you and your job specifically so that you can be notified if there is any cancellation or reduction of coverage during the course of the work. If your contractor has insurance from two agencies—one for liability and one for workers' comp—make sure you get certificates from both.

The standard form for proof of insurance is the **ACORD 25-S**. The certificate will outline what type and amount of insurance your contractor carries. It will show the amount of coverage the contractor is carrying for liability insurance, and

does it matter?

If the work being done is too minor to warrant a building permit, requiring insurance is your choice (see "Going Bare," page 68, if you decide to do without). If it's a big job, your community may make the choice for you. Some states will not license contractors without insurance; many communities will not issue building permits without proof of license and insurance. If you proceed without a permit, you stand a chance of losing your certificate of occupancy. (We know; it happened to us.) Research your local rules, and follow them.

what's a contractor?

In general parlance, a contractor is someone hired to work on your house. A general contractor (GC) is the person you hire to manage the whole job and to hire the individual tradespeople. Tradespeople hired by the GC are subcontractors and should be covered by the GC's insurance. If you hire them yourself, they are independent contractors and should carry their own policies.

now to read the certificate of liability

what the monetary limits are for separate items such as personal injury, fire damage or medical expenses.

The aggregate, or the maximum amount that could be paid out by your contractor's insurance company, will also be listed on the form. Find out if this amount is linked to a period of time or to the project itself. A low maximum in a given time period added to an unlucky year can lead to a contractor without enough insurance left to cover any accidents on your job.

If the value of your project exceeds the amount of coverage, you may want the contractor to increase the policy limit while working on your property. Remember that when a contractor adds more coverage for a specific project, the additional premium payment usually winds up on your bill.

The certificate will also tell you the active dates of the policy. If your project extends beyond the date listed, make sure you have an updated certificate before the old one expires.

In the workers' compensation section, check to see if the contractor himself or herself is covered. In many states, contractors can opt out of coverage if they are sole proprietors with no employees, partners in the business, or major stockholders if the business is incorporated. In theory, this exemption is only for deskbound executives; if your contractor is going to be at risk at any time, he or she should be covered by workers' comp.

The ACORD 25-S is not a perfect document,

if things go wrong

If a contractor, employee or subcontractor damages property in the course of a job, the contractor may pay for it and submit a claim to his insurer. If the contractor doesn't admit responsibility, the damaged

party's insurer must try to collect from the contractor's insurer. Bills for job-related injuries go to the company or state board that issued the workers' comp policy. Claims over problems with completed work

lacking the space to record all eventualities. The American Institute of Architects (202-626-7300) publishes a rider (AIA document G715) to the ACORD 25-S that asks more specific questions regarding coverage and provisions of your contractor's insurance policy and outlines more thoroughly the responsibilities of each party. (We liked the section about Explosion, Collapse and Underground Hazards.) If your job is particularly large or you are particularly risk averse, it provides worthwhile additional protection.

should go first to your homeowner's insurance provider. If a new roof leaks and ruins the dry-wall below, your insurer will usually issue you a check for the cost of repairing the damage and then collect from the

contractor's insurer. (Most liability policies spell out the limits to coverage and the time limits for filing a claim; this is why you kept that certificate.) Remember that the liability policy does not

cover faulty workmanship, so it won't pay for having the roof redone. (This gets into warranties, contractual penalties, arbitration and—as a last resort—the civil court system, but that's another story.)

ACORD. CERTIFICATE OF LIABILITY INSURANCE

NAME AND ADDRESS OF INSURANCE AGENCY OR BROKER ISSUING FORM: Notary Insurance Agency, 14 Broad St., Springfield, IA 12345

NAME OF UP TO 4 COMPANIES PROVIDING LISTED COVERAGES: A, B, C, D: ABC Insurance Company, DEF Insurance Company

YOUR CONTRACTOR'S NAME AND ADDRESS AS THEY APPEAR ON THE POLICY: Grace General Contracting Inc, 125 Western Ave., Springfield, IA 12345

COMPANY PROVIDING GENERAL LIABILITY COVERAGE, IDENTIFIED BY LETTER; ALSO POLICY NUMBER, EFFECTIVE STARTING AND ENDING DATES FOR COVERAGE, POLICY'S DOLLAR LIMITS: A, 1234567890, 01/01/95, 01/01/96, \$500,000

SECTION FOR EXCESS LIABILITY POLICY, COVERING DAMAGES OR INJURIES ABOVE OR OUTSIDE GENERAL OR WORKERS' COMPENSATION POLICIES; COMPANY, POLICY NUMBER, DATES AND DOLLAR LIMITS: B, 1234567890, 01/01/95, 01/01/96, \$1,000,000

SECTION FOR WORKERS' COMP AND EMPLOYERS' LIABILITY COVERAGE; SAME DESCRIPTIVE DETAILS: C, 1234567890, 01/01/95, 01/01/96, \$100,000

PROJECT DESCRIPTION—CONTRACTOR'S JOB #, SITE ADDRESS—APPEARS HERE: For Job #1, 47 Pleasant St., Springfield, IA

NUMBER OF DAYS IN WHICH THE AGENCY WILL TRY TO NOTIFY YOU OF POLICY CHANGES: 30

YOUR NAME AND ADDRESS MUST APPEAR HERE: Justin Walker, 47 Pleasant St., Springfield, IA 12345

SIGNATURE OF AUTHORIZED BROKER ISSUING FORM: [Signature]

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1 Home Repair Encyclopedia details more than 100 do-it-yourself home projects with video, animation, content and illustrations.



2 3D Landscape brings the power of Computer Aided Design and 3D visualization to your desktop. Its multimedia how-to guide is the ultimate software "tool" for any landscaping project.



3 3D Deck makes it easy for anyone to design and build a beautiful custom deck, while eliminating costly mistakes.



4 Popular Mechanics New Car Buyers Guide lets you compare more than 800 new cars, trucks and sport utility vehicles. Then it will calculate the exact dealer price for the model and options you select.



5 The Homebuyer's Guide helps you analyze every aspect of home buying, from searching and negotiating the best price to closing your financing.



6 Garden Encyclopedia helps you select the perfect flower, vegetable or decorative plants from more than 1000 choices.

going bare

There are reputable and competent contractors who carry no insurance. Some hate the paperwork; others simply cannot afford to pay the premiums and stay competitive (Doctors who drop malpractice insurance for the same reasons say they are "going bare.") If you choose one, you can try to

1. protect yourself in several ways. Have a frank discussion with the broker who issued your homeowner's policy. You may already be covered for damage by a contractor; in a few states, your policy even (by law) includes workers' comp. Ask the broker about buying an umbrella policy

2. Get the contractor to sign a letter stating that he will defend any liability claims in connection with his negligence, and will cover

3. for extra liability coverage or an interim policy to last while the work goes on. Either one will cost more than \$200—but it's still cheaper than a lawsuit. Get the contractor to sign a letter stating that he will defend any liability claims in connection with his negligence, and will cover

4. all legal fees and pay any award granted (known as a "hold harmless" clause). Be aware, though, that if the contractor has no assets, an injured party can pursue you instead. If the contractor has assets, he's probably insured. Some states will insure a homeowner for workers' comp. Call 800-

942-4242 to see if your state is one. Some states also have funds to pay for damage by uninsured or underinsured contractors, although the reimbursements are minimal. Contact your state's contractor licensing agency or consumer protection department for more details.

state by state requirements

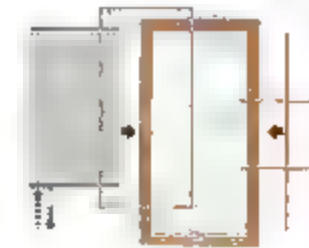
Many communities within the United States recognize the importance of liability insurance and workers' compensation insurance by requiring proof of one or both before issuing a license to a contractor. Call your local building department or town hall for more information. The chart below lists liability insurance specifics for those states that require it. In Alabama, Arizona, Georgia, Iowa, Louisiana, Massachusetts, Michigan, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, South Carolina, Tennessee, Virginia and West Virginia, contractors can be licensed or registered without proof of liability insurance; however, all states except Texas require contractors to have workers' compensation insurance (some exempt contractors with fewer than three or five employees, most exempt sole proprietors). The following states do not require statewide licensing of general contractors and hence have no statewide liability insurance requirements: Colorado, Idaho, Illinois, Indiana, Kansas, Kentucky, Maine, Missouri, New Hampshire, New York, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Vermont, Wisconsin, Wyoming.

ALASKA	Liability insurance of \$20,000 for property; \$50,000 for personal injury for one person, \$100,000 for two.
ARKANSAS	Residential contractors must have liability insurance of \$100,000.
CALIFORNIA	Liability insurance required; amount varies by county.
CONNECTICUT	Must have liability insurance; no minimum. Contractors must carry workers' compensation for subcontractors.
DELAWARE	Must have liability insurance; no minimum.
DISTRICT OF COLUMBIA	Public liability in the amount of \$100,000; \$50,000 in property damage.
FLORIDA	Liability insurance required; no set amount.
HAWAII	Liability insurance of \$50,000 for property damage; \$100,000 per person for personal injury; \$300,000 for each occurrence.
MARYLAND	Liability insurance in the amount of at least \$50,000.
MINNESOTA	Contractors must carry at least \$10,000 in property damage, \$100,000 in liability insurance.
MISSISSIPPI	Liability insurance of \$300,000 per occurrence, \$600,000 total.
NORTH DAKOTA	Must provide proof of liability insurance; no minimum amount specified.
OREGON	Liability insurance of at least \$100,000 or \$500,000 depending on their classification.
RHODE ISLAND	Liability insurance of at least \$300,000 combined single limit, bodily injury and property damage.
UTAH	Liability insurance of \$100,000 per incident and \$300,000 total.
WASHINGTON	Property damage insurance of \$20,000; \$100,000 in bodily injury or death insurance.

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A LETTER FROM

This Old House

RENOVATOR'S DISEASE MAY be incurable. What's worse, all of us at *This Old House* seem to have it. Renovator's disease is the inability to stop working on your house even when it makes no economic sense to keep doing so. Russ Morash, who created the show in 1979 and still directs it, may have the worst case: he has continually renovated his 1800s farmhouse since he bought it in 1975. Master Carpenter Norm Abram is building a new house (there's a story about it in this issue); it has been in process for so long now (four years) that it is starting to qualify as a renovation. Steve Thomas, our host, does finish his projects—pursuing them with maniacal singlemindedness. He then immediately embarks on another one, which, like all the rest, begins innocently and then expands to three times the intended scope, not to mention cost.

This Old House is our house too, and we tinker with it constantly. What you have in your hands is our latest addition. *This Old House*, the magazine. In the sixteen years we've been on the air, we've often wanted a print companion—a place to tell the stories we come across but don't have time for in a half-hour show, or to provide the details that just don't translate well to TV.

So, welcome. Please make yourself at home. And let us know what you think. Like our own houses, *This Old House* is a work in progress. It will never be finished, because we will always be "improving" it.

Steve Thomas and Isolde Motley



Norm Abram

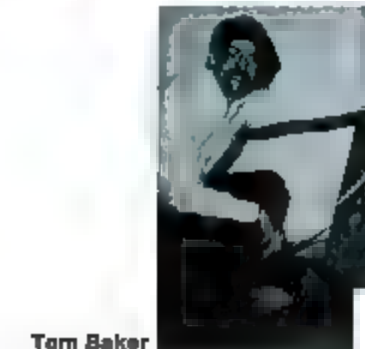


Diana Hess

Russ Morash



John Voelcker



Tam Baker

Brooke Deterline



Jeanne Huber



Ben Lloyd



Bob Abranowicz

Steve Petransk



Tim Jones



Jill Priluck and Nancy McCarthy



Matthew Drace



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choosing kitchen materials

BY BRAD LEMLEY PHOTOGRAPHS BY DANIEL PROCTOR



This Old House host Steve Thomas uses a nailer on window jamb extensions.

Workers pried up the old kitchen floor, then demolished the exterior walls to the studs and tacked up plastic sheeting to keep out the rains. Next, they braced the ceiling and, soon after this photo was taken, ripped out the studs. New exterior walls extend 8½ feet beyond the old ones.

Renovation in this part of the house often focuses on cabinetry, but countertops and floors have much more impact on style and utility.

DENNIS DUFFY, A 47-YEAR-OLD mortgage broker in Napa, California, had a modest dream—a brighter kitchen. While most of his 1906 farmhouse retained its charm, the kitchen had been blighted by a 1960s renovation. The pseudo-brick vinyl tile floor, copper-colored appliances and brown laminate countertops had to go—maybe a few more windows?

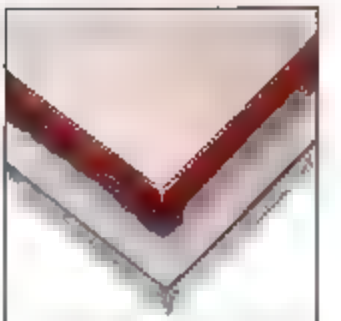
While he was dreaming, Dennis saw an article in the *Napa Register* newspaper, and before long his kitchen had become the site of a *This Old House* renovation. The show's producer introduced Dennis to designer John Lai, who argued for a more extensive revamp. Soon Dennis was making "50 decisions a day," mostly about the materi-

als for a kitchen that was about to grow from 436 square feet to 640, including a new utility room and bathroom. Choosing between four shades of green countertop can be harrowing, but Dennis loved it: "I felt like a kid in an F.A.O. Schwartz toy store."

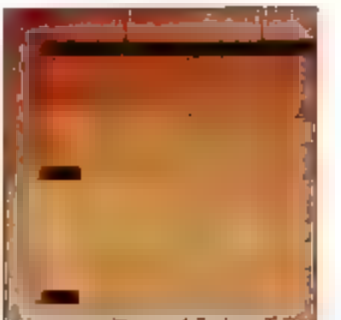
Dennis's affability in the midst of a renovation was due not only to his nature, but also to manufacturers eager for credits on the show. They donated everything from cabinets to a refrigerator—leaving Dennis free to indulge his tastes. He picked soft green solid surface countertops, windowpane-trimmed oak floors and white wood cabinets. Though the clean, spare, modern kitchen now contrasts jarringly with the dark, antique coziness of the rest of the house, he's delighted.

The rest of us have a better shot at winning the lottery than of luring *This Old House* into renovating our old kitchens. For us, selecting kitchen materials requires balancing tastes and budgets. Steve Thomas, coauthor of *This Old House Kitchens*, believes fiscal limits aren't necessarily bad, and says there is no single best countertop, flooring or cabinet. When remodeling a kitchen, he says, "you have an opportunity to accommodate—and celebrate—your family's way of doing things."

COUNTERTOPS



FLOORING



VIRTUAL KITCHENS



countertops

CHOICES

1
STAINLESS
STEEL

1. STAINLESS STEEL

INSTALLATION: Glued to plywood substrate; professional installers form edges and backsplash.

PROS: Stain-proof; scorch-proof; difficult to dent; industrial appearance.

CONS: Fabrication is expensive; industrial appearance.

PRICE: \$100 per lineal foot, installed.

2
MAN-MADE
SLAB

2. MAN-MADE SLAB

("FireSlate")

INSTALLATION: Same as stone slab.

PROS: Very durable; resists heat, scorching, etching, staining.

CONS: Unusual in homes; installers may be inexperienced; may appear more commercial than residential.

PRICE: \$23 per square foot, plus installation.

3
HIGH-PRESSURE
LAMINATE

3. HIGH-PRESSURE LAMINATE

(Formica, Wilsonart, Micarta)

INSTALLATION: Sheets are glued to medium- or high-density fiberboard backing; ready-made lengths available at home centers.

PROS: Inexpensive; widely available; tough surface; wide range of colors, patterns and textures; easy to clean; well-suited to most cooking tasks.

CONS: Hard to repair; not suitable for cutting; brown edge may show at seams; can be scorched by hot pots.

PRICE: \$20-\$45 per lineal foot, installed.

4
STONE
SLAB

4. STONE SLAB

(granite or marble)

INSTALLATION: Same as wood,

but base cabinets may have to be reinforced to support extra weight.

PROS: Long-lived; luxurious in appearance; impervious to scorching; good for baking areas.

CONS: Expensive; hard; cold; marble may etch or stain if improperly sealed.

PRICE: \$150 and up per lineal foot, installed.

5. CONCRETE

INSTALLATION: Poured into molds, removed and installed like stone slabs.

PROS: Scorch-proof; hard to scratch; looks like stone slab at lower cost.

CONS: Edges can chip; must be sealed regularly.

PRICE: \$75-\$200 per lineal foot, installed.

6. WOOD

(such as butcherblock)

INSTALLATION: Screwed in place or secured with silicone adhesive.

PROS: Natural warmth; resilient surface; damage can be sanded away; good for chopping.

CONS: Susceptible to warps and cracks, stains, water damage and bacteria buildup (unless disinfected regularly); should not be used near sinks.

PRICE: \$50-\$60 per lineal foot, installed.

7. SOAPSTONE

INSTALLATION: Same as stone slab.

PROS: Authentic material for 19th-century-style kitchen; resists heat.

CONS: Experienced installers are rare; stains easily; challenging to maintain; more susceptible to

cracking and chipping than harder stone.

PRICE: \$140 per lineal foot, installed.

8. EXOTIC METALS

(zinc, copper, rusted steel)

INSTALLATION: Same as stainless steel.

PROS: Durable; scorch-proof.

CONS: Must be thoroughly waxed and sealed for food safety; zinc stains badly and is recommended for bars only, not food preparation, because zinc layer is only $\frac{1}{8}$ inch over steel.

PRICE: \$60 and up per lineal foot, installed.

9. CERAMIC TILE

INSTALLATION: Should be laid on cement backer board or in a bed of mortar—not glued directly to plywood or particleboard.

PROS: Inexpensive; durable; resists heat and scratches; easy to clean.

CONS: Professional installation adds to cost; can chip; grout may discolor; requires sealing; uneven surface makes baking tasks difficult.

PRICE: \$5-\$25 per square foot.

10. SOLID SURFACING

(Avonite, Corian, Surali)

INSTALLATION: Factory-licensed shops fabricate.

PROS: Seamless; very durable; easy to clean and repair; resists scorching; sinks of the same material can be glued to underside of counter, giving seamless bond.

CONS: Expensive; makers discourage do-it-yourselfers.

PRICE: \$100-\$200 per lineal foot, installed.

6
WOOD

7
SOAPSTONE

8
EXOTIC
METALS

9
CERAMIC
TILE

10
SOLID
SURFACING

COUNTERTOPS ARE THE most visual and tactile kitchen elements; it's easy to fall in love with one type to the exclusion of others. Don't. In his home, Steve "disregarded common sense" and set his sink into a maple counter. The wood's expansion and contraction with humidity changes repeatedly breaks the polyurethane sealant he used on the sink rim. Despite diligent mopping, the wood is now cracking.

So it's smart to put different sorts of countertops in locations that make the best use of their strengths. Ceramic or stone tile can go next to stoves, so hot pans can be placed there. Butcherblock can be set into an island surface meant for lots of slicing and chopping. (Duffy's island has two such inserts.)

Laminate or solid surfacing can be used everywhere else. Another solution is pullouts. Steve likes a kitchen he saw with lavish polished granite counters and no fewer than six pull-out cutting boards at key points around the room.

Countertops that meet a wall commonly have a backsplash—a vertical section about four inches high to guard against spills. But it makes sense to go higher. In the Duffy kitchen, the Avonite backsplash behind the cooktop extends up to the ventilating hood. Elsewhere it reaches to the bases of windowsills. And there's no rule that backsplashes must be made of the same material as counters. One of Steve's favorite small kitchens, squeezed into an urban closet, uses mirrors as backsplashes to expand the sense of space.



A level countertop begins with a level cabinet. Steve taps a wood shim under a cabinet corner to raise it, checking his progress as he goes.

THE ART OF THE SOLID SURFACE

The architect's drawings originally specified granite countertops, but at \$250 per lineal foot installed, the \$12,000 price seemed too high even for donated material. So Dennis went with Avonite, a solid-surface synthetic. The color used was slate-green with a black detailing stripe. The edge is bullnosed with cove molding.

First, installer Kara Raymond made a cardboard template to record sizes, sink cutouts and wall irregularities. In her fabrication shop, she used the template to lay out the counters. Although a skilled do-it-yourselfer could craft solid-surface material with woodworking tools, manufacturers are wary of amateurs who make mistakes and then demand refunds. That's why it's difficult to buy such materials in home-improvement stores.

Kara also attached four-inch-wide, $\frac{3}{4}$ -inch thick plywood strips to the counter's underside, raising the finished height to a standard 36 inches. Back in the kitchen, she joined large sections of the countertop with pigmented two-part glue. Then she sanded it smooth and glued the countertop assembly to the base cabinets with silicone.

Countertops are often measured by the lineal foot: a 25-inch-deep section that is one foot wide.

flooring

CHOICES



1. HARDWOOD

(including oak, cherry, birch, maple and hard yellow pine; laminated or solid strips, square tiles)

INSTALLATION: Strips are nailed, glued or screwed to subfloor; tiles are glued.

PROS: Warm underfoot; not as hard as stone or tile; polyurethane finishes resist stains and water damage.

CONS: Frequent refinishing may be required; may squeak if badly installed; shows wear; dirt collects in grooves and cracks.

PRICE: \$5–\$15 per square foot, installed.



2. CERAMIC & STONE TILE

(includes terra cotta, granite, marble, slate, pigmented concrete, quarry, saltillo and terrazzo tiles)

INSTALLATION: Often set in thin mortar layer on backer board; seams filled with cement- or epoxy-based grout.

PROS: Durable; impervious to dents and scratches.

CONS: Hard surface; cold underfoot; noisy; dirt can collect in grout; can be costly.

PRICE: \$5–\$25 per square foot, on average; some tiles cost \$100 per square foot.



3. LINOLEUM

INSTALLATION: Laid like sheet vinyl, but joined with heat, not chemical adhesives.

PROS: Inherently antiseptic; pleasant linseed oil smell; no man-made ingredients; solvent-free.

CONS: Now a specialty product, so difficult to find.

PRICE: \$4–\$5 per square foot, installed.



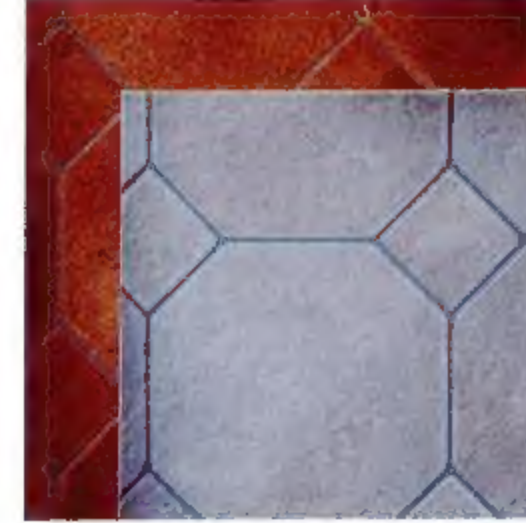
4. VINYL TILE

INSTALLATION: Glued to subflooring; tiles butt, edge tiles cut to fit; patterns need careful planning; classic do-it-yourself project.

PROS: Simple to install; easy to repair; wide range of color and pattern options.

CONS: Poorly installed tiles can crack or lift; floor has many seams.

PRICE: \$2–\$10 per square foot, installed.



5. SHEET VINYL

(resilient flooring)

INSTALLATION: Glued to subfloor—challenging for amateurs.

PROS: Inexpensive; soft underfoot; easy to clean; few seams.

CONS: Slippery if wet; can be cut or sliced by sharp objects; may last only 10 years; subfloor flaws show if poorly installed; smelly when new.

PRICE: \$2–\$10 per square foot, installed.



HARDWOODS AND HARD WORK

The Duffy kitchen floor was laid with quartersawn two-inch-wide white oak strips. First, a kraft-paper vapor barrier was placed over the $\frac{3}{4}$ -inch plywood subfloor. Then workers drove in a pair of one-inch steel finishing nails every seven inches along the top of each oak strip. To save money, no flooring was laid where cabinets would sit (below). The border trim (above) featured a pair of $\frac{1}{2}$ -inch strips of Peruvian walnut. Installers used a vintage 1940s machine called a Cavanaugh; the operator whacked a plunger on the top with a one-pound mallet to drive in and countersink nails $\frac{1}{8}$ inch below the surface of the strips. The resulting dimples, and any other tiny gaps, were then filled with wood putty and the whole floor was drum-sanded. The first coat was a thick high-build sealer specifically formulated to bulk up the finish. Then came three coats of less viscous, waterborne urethane. Most wood floors are now made from $\frac{3}{4}$ -inch-thick strips with tongue-and-groove edges that lock together. Nails don't show because they're driven diagonally. But Duffy's dining room and parlor, which adjoin the kitchen, have far thinner $\frac{1}{2}$ -inch-thick flooring, so the kitchen strips are similarly thin to avoid toe-stubbing thresholds.



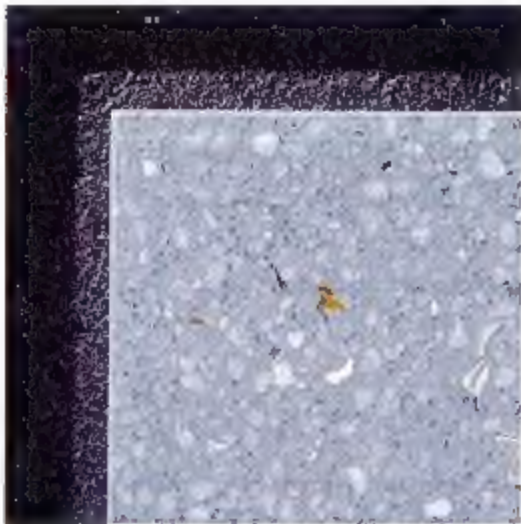
6. CORK TILE

INSTALLATION: Laid like vinyl tile.

PROS: Soft underfoot; good heat and noise insulation; renewable resource.

CONS: Less durable than some options; unfinished cork requires frequent sweeping.

PRICE: \$2–\$6 per square foot, installed.



7. TERRAZZO

INSTALLATION: Mix of marble chips with cement or resin base poured in place; cement base requires concrete substrate; epoxy base requires only plywood; surface is ground smooth.

PROS: Very durable; can be sanded or sealed to look like new.

CONS: Installers are rare; installation creates "a hellacious mess"; expensive.

PRICE: \$25 and up per square foot, installed.



8. RUBBER

INSTALLATION: Laid like vinyl in sheets or tiles.

PROS: Durable; almost maintenance-free; comfortable underfoot; resists spills; many textures available; industrial look.

CONS: Can be cut by sharp objects; industrial look.

PRICE: \$5 and up per square foot, installed.



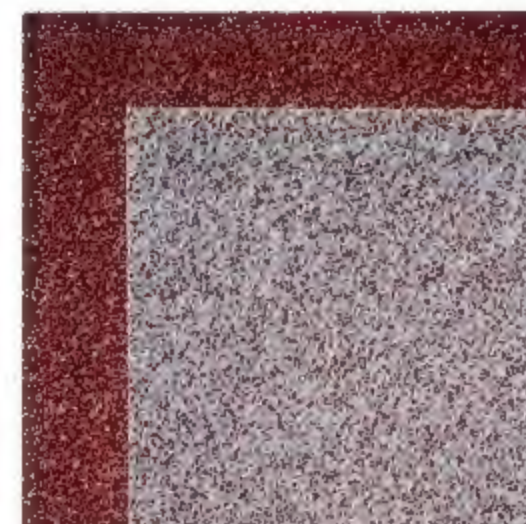
9. CARPETING AND AREA RUGS

INSTALLATION: Carpet laid as in other rooms; rugs require nonskid pads.

PROS: Inexpensive; quick to install; soft underfoot; easily replaced.

CONS: Distinctly unhygienic; may retain odors from cooking or spills.

PRICE: \$1–\$4 per square foot, installed.



10. EPOXY

INSTALLATION: Squeegeed or rolled in place by professionals.

PROS: Durable; no seams to collect dirt.

CONS: May be difficult to find experienced installer; abrasive surface.

PRICE: \$5–\$9 per square foot, installed.



visualizing your kitchen

VIRTUAL KITCHENS

Most architects still produce hand-drawn renderings of their designs, but a few now offer computer-generated 3D simulations as well. This new technology lets users "walk" through a computer-rendered image of a space shown on screen. In many cases, owners and occupants can identify spatial layout problems or specify new design requirements before any work is done.

The Duffy kitchen was first simulated (top) when David L. Munson, a longtime fan, approached *This Old House* and volunteered to do it. He was eager to show off his work at the advanced technology group of Hellmuth, Obata, Kassabaum (HOK)—one of the world's largest architectural firms. The firm's software, which runs on powerful scientific workstations, had been used mostly to depict high-end laboratories costing up to \$600 per square foot. Munson spent more than 200 hours entering data from the blueprints of the first version of the design. He estimates that his time would have cost a client \$30,000.

Some cabinet showrooms and home centers offer 3D modeling programs that display their cabinets as they would look installed in shoppers' own kitchens, based on a simple floor plan. Shoppers are often given a printout of the simulated design to take home.

If you want to do it yourself, the cost drops considerably—to about \$60, the price of 3D Home Architect, from Brøderbund Software, which is the best-selling 3D home simulation program on the market. (You'll need a PC running Windows, too.) We asked Brøderbund to model the final version of the Duffy kitchen using 3DHA (middle). It took an experienced user about five hours to enter the data; a novice requires at least twice that.

Viewers may recall that Norm Abram, when viewing HOK's model, questioned the location of a support pillar that limited the size and accessibility of the breakfast nook. The final kitchen (bottom) doesn't have the pillar. As desktop computers gain power, home users may soon be able to do as Norm did: identify flaws in a design before the first nail is driven.



high-tech
computer
simulation



the home
computer
version



Dennis Duffy's
finished kitchen

BLUEPRINT INSERT

The folded insert shows several views of the Duffy house plans. The full set of architectural drawings and specifications ran some 20 pages, but these are representative of the drawings an architect would use to help a client visualize a project.

The four house exteriors are called elevations, and they immediately reveal a limitation of such flat-on views. In the elevation showing the west wall of the completed kitchen, the two sets of French doors appear flush with the back wall. There's nothing in this drawing to indicate that the doors on the left are set back 3 feet 6 inches, and those on the right recessed 8 feet 6 inches. To get that information, you must inspect the "Proposed Floor Plan," but that still isn't enough to allow anyone unaccustomed to such renderings to envision the kitchen.

For that you'll need an axonometric drawing. (While architects routinely draw them, this wasn't part of Dennis's original plans. It was commissioned for \$500 by *This Old House* magazine.)

It's important to note that this isn't a true perspective view, in which parallel lines would, if extended, eventually meet at vanishing points. The axonometric drawing is simply a perspective-free tilt-up from two dimensions. There's only a small difference between this and what the eye sees, although for much greater square footage, a true perspective might be helpful. If these views aren't enough, you can ask for a scale model, but that naturally drives up costs. Robert Livingston of Architectural Associates, the firm that prepared the drawings, says he knows of one high-end architect who builds up to 10 models of each residential project he designs.

All these drawings were done by hand, but Livingston says his office—and many others—are installing computer-aided design, or CAD, systems. Traditionalists may sniff that CAD removes the art from architecture, but its ability to crank out drawings from any perspective inexpensively can help to quiet the age-old plaint of the client: "That's not how I imagined it!"

LOCATION MAP



